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Skeptical Inquirer

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Volume 20, No. 5 • **September/October 1996**

Science Fiction, Skepticism, and Reality

E.R. Stewart, Greg Bear, Frederik Pohl, Hal Clement

Celebrating CSICOP's 20th: The First World Skeptics Congress

Conspiracy Theories and Paranoia

An Afternoon with a Psychic

Traditional Medicine and Pseudoscience in China

Part 2 of a Report of the Second CSICOP Delegation

Published by the Committee for the Scientific Investigation of Claims of the Paranormal

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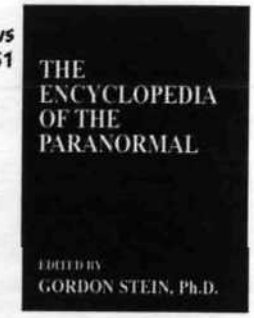

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EDITOR'S NOTE

Skepticism, Reality, and Science Fiction

Many of today's scientists credit science fiction with stimulating their early interest in science. The same is true with some science journalists. I'm one of them. With me it was Heinlein, Bradbury, Clarke, Asimov, Bester, Ballard, Blish, Van Vogt (among many others then and since), and their illustrious predecessors Verne and Wells. They stimulated the imagination and enlarged the world of possibilities, using scientific concepts to ask, "What if?"

Science fiction has always applied hard science, soft science, and squishy-soft paranormal concepts in exploring future possible technologies and societies. What is the science fiction writer's role and responsibility, if any, in distinguishing between fantasy and reality, possibility and probability, meaning and meaninglessness—between exploring real possibilities and possibly planting the seeds of paranormal belief? These are fascinating questions, and in this issue we consider them.

Writer Eugene R. Stewart and distinguished science fiction novelists Greg Bear, Frederik Pohl, and Hal Clement each address the issues in their own way.

"Art, as well as science, tries to find meaning; and science fiction in particular tries to make the search rational, understandable, and communicable, by thinking ahead, considering alternatives, and trying to plan for a realistic mental attitude toward change and adaptation," writes Stewart in his lead essay. But he also criticizes some science fiction: "Gullibility, laziness, and self-delusion, even hoax and fraud, divert some writers from real science, which might require some difficult research, toward the false claims and fake magic of quick-and-dirty wonderments that can be sewn of whole cloth."

Bear, Pohl, and Clement are renowned for their "hard science fiction"—using scientific concepts and principles realistically in their fiction.

"Science fiction writing, at its finest, *is* an enormous leap of skeptical imagination," writes Bear. "The art is in choosing which impossibilities to shatter, which future advancements to promote to reality." According to Pohl, "What science fiction can profitably do to counteract superstition is to explore the wonders of real scientific possibilities. . . . But that is precisely what a great many science fiction writers have been doing . . . for the last half-century and more." Clement describes how "science fiction plays a demonstrable part in the development of human ideas," starting at the most speculative end of the branch and extending out into the area of hypothesis.

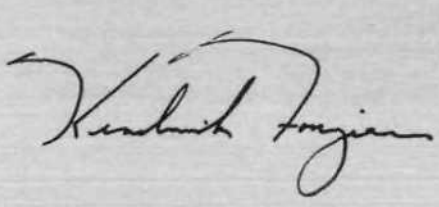
We would be interested in hearing from other science fiction writers—and their readers—on the same topic.

* * *

It's one of those wonderful coincidences (not synchronicity!), but in our Forum section in this issue we also represent Jane Haddam's thoughtful essay "Art, Reason, and Reality," asking some of the same kinds of questions about *literary* fiction. A detective novelist, she wonders why some of today's most respected literary fiction writers are gratuitously inserting paranormal themes into their books without even attempting to justify them. It's something novelists of the hard-nosed detective genre could never get away with, she says.

* * *

If you are at all concerned about conspiracy theories, militias, controversial claims of repressed memories of ritual cult abuse brought out under therapy, and the interaction of all these with paranoia and political world views (the Illuminati and the New World Order, for example), carefully read Evan Harrington's in-depth article in this issue, "Conspiracy Theories and Paranoia: Notes from a Mind-Control Conference." It's sobering.



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Something for Everyone at World Skeptics Congress

It began with a stirring live symphonic performance of Gustav Holst's *The Planets* beneath a striking video of spacecraft imagery of the planets and ended with Steve Allen at the piano banging out some boogie-woogie. Between the rousing musical endpoints, audiences were treated to three days of packed scientific and scholarly presentations on everything from antiscience and alternative health cures to homeopathy, parapsychology, UFOlogy, and the mechanisms of self-deception.

The first World Skeptics Congress—also the twentieth-anniversary conference of the Committee for the Scientific Investigation of Claims of the Paranormal, "Science in the Age of (Mis)Information"—had a little something for everyone.

There was a surprise announcement that asteroids had been named after CSICOP and its founder, Paul Kurtz (see page 8). There was a lively lunchtime question-and-answer interchange between Chris Carter, the creator of the immensely popular *X-Files* television show, and an audience of skeptics ranging from admiring fans to critics worried that the Fox network drama promotes paranormal beliefs. The conference even featured a surprise visit from Charles Darwin (persuasively played in black cape by biology professor Clyde Herreid), introducing and briefly upstaging his twentieth-century evolutionary disciple, Stephen Jay Gould.

A Council on Media Integrity (see page 8) was created, a twentieth-birthday cake cut, awards presented, conference T-shirts sold, and a second World Skeptics Congress initiated (in Heidelberg, Germany, probably June or July 1998).

At least 1,200 people from twenty-four countries attended all or parts of

20TH ANNIVERSARY OF CSICOP
WORLD
SKEPTICS CONGRESS
Sponsored by the Committee for the Scientific Investigation of Claims of the Paranormal
Science
in the Age of (Mis)Information
June 20-23, 1996
State University of New York at Buffalo
Amherst, New York USA
AN INTERNATIONAL ORGANIZATION

the congress—by far the largest crowd for any CSICOP conference. (The local newspaper estimated that 2,000 attended Gould's lecture in the university gymnasium.) They heard some seventy speakers, themselves a representative roster of internationalism: Australia, Belgium, Canada, China, Germany, Hungary, India, Italy, Mexico, the Netherlands, Russia, Spain, the U.K., and the U.S. There was a Nobel laureate (Leon Lederman), two MacArthur Fellows (James Randi and Stephen Jay Gould), an Emmy winner (Chris Carter), and the recently knighted if chronically rumpled (a point amusingly made by Randi in his introduction) editor emeritus of *Nature,* John Maddox.

The media were there in force as well. The Associated Press sent out an opening-day story. National Public Radio's *Science Friday* did two hours live from the conference. WGN radio Chicago, Australian radio, C-SPAN, and the BBC were there; CNN did something, NBC's *Today Show* mentioned the conference, as did David Letterman on his CBS program *Late Show*, and there was an array of other print reporters and writers from round the world. The *Boston Globe* did a big feature (July 1), and the *New York Times* published exerpts from some of the conference papers (July 7).

We begin our coverage of the congress in this issue with Wendy Grossman's lively, impressionistic account and commentary, and several short pieces. Look for more in our next issue and for articles based on several of the most prominent presentations later.

—Kendrick Frazier, Editor

Four Days with the Skeptics:
CSICOP 20th-Anniversary Conference Focuses on Science, Skepticism, Media Misinformation

WENDY GROSSMAN

The guy in the front of the airline taxi from JFK airport to La Guardia was tired: he'd traveled all the way from Costa Rica that day and didn't appreciate the four-hour delay and change of airport due to bad weather. He wasn't too thrilled two hours later either, when the Amherst, New York, Red Roof Inn told him they were sold out. That's when it dawned on me that we were going to the same place.

"You here for the CSICOP conference?" I said.

"No. I'm here for the skeptics' congress." Aha.

CSICOP's twentieth-anniversary conference ("Science in the Age of (Mis)Information," June 20-23)—billed as the first World Skeptics Congress—drew at least 1,200 people, according to Barry Karr, CSICOP's executive director. The couple at the table next to mine at breakfast the next morning telling the waitress they were going to see Steve Allen at the Saturday night banquet were two of them. The Danish reporter sitting at the Red Roof Inn waiting for a taxi was another. There were also many dedicated skeptics from Germany, the U.K., Belgium, all over the world, in fact.

And so they came and (most of them) were scooped up by old yellow school buses and taken to the State University of New York at Buffalo, where Paul Kurtz, CSICOP's founder and chairman, opened the proceedings with the help of four other speakers. While they were talking, forty black-clad members of the Buffalo Philharmonic waited on stage to play four sections from Holst's *The Planets.*

Three main themes reappeared over and over again throughout the conference: First, the mass media are, for many people, the primary form of education, and these same mass media do not understand science or present it well. Second, antiscience is growing throughout the land. And, finally, it matters.

Or, as Australian journalist Phillip Adams put it, "We have to deal with the fact that we're involved with the sort of madness that destroys societies, not just makes skeptics irritated."

At the opening news conference, a reporter from Buffalo radio station WBFO asked the panel why a program on alien abductions is harmful—it's not, after all, *60 Minutes* or the evening news. John Maddox, editor emeritus of *Nature,* pointed out, and psychologist Ray Hyman said later, over lunch, the same thing: it is no longer possible to judge a program or news story by its source. Maddox mentioned the BBC; Hyman mentioned the *New York Times.* Both are correct in their examples. I've seen an astrologer profiled in the *New York Times Magazine,* and I've seen plenty of uncritical programs on the BBC about homeopathy and even spontaneous human combustion in addition to the hour-long program on UFOs Maddox mentions. Maddox and Hyman are echoed the next day by Chris Carter, the creator of *The X-Files,* who adds that there is no TV equivalent of the divisions in book stores between fiction and nonfiction sections.

Carter, who got faxes warning him not to appear in front of such a hostile audience, found himself among autograph-seeking fans. His motives were simple when they started the show: "I just wanted to scare the pants off people every Friday night."

But now Maddox goes on to say that he thinks the problem started with the end of the Cold War: "Until then, scientists were respected." Now there's increasing acceptance of the notion that science is just another point of view. I am suddenly re-experiencing the generation gap.

I am forty-two, and in my lifetime, everything has been questioned. The world is not what anyone thought it was going to be when this over-fifty panel was growing up. The generation on whose cusp I coast through life

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COMMENTARY

learned from the protests against the Vietnam War and the Watergate hearings that no authority could be trusted absolutely. Our generation became folk singers instead of middle managers, and seeded the environmental movement. Our images of science include the worst horrors of primate and medical research and Chernobyl as well as the shimmering, Michelin-man shape of Neil Armstrong stepping down onto the surface of the moon. No one has the respect they had before the 1960s, not teachers, religious figures, politicians, royalty, doctors, or lawyers. Why should scientists be any different?

Leon Lederman, the Nobel-laureate physicist, in his speech that evening, touched on this when he said that the more you "raise scientific understanding the more people may criticize it. I think science needs the criticism that results from honest education, but it may turn into skepticism about the usefulness of science."

After all, as mathematician Norman Levitt (co-author of *Higher Superstition*) argued the next day, "We will be seen as guiding people to a place which is bleak and cheerless because it is indeed bleak and cheerless. But we make it a tougher sell than it needs to be." Skeptics, he observed, "are inclined to be show-offs about our tough-mindedness, perhaps as a compensatory gesture. But it's dangerous when you're trying to increase respect and attention."

We need, Levitt wound up, "to understand ourselves as well as the masses out there." Stephen Jay Gould, similarly, in his keynote address rambled through stories to show the social context in which science operates; science is a human activity, if a self-correcting one.

The official news of the conference is CSICOP's new Council for Media Integrity. The mission of the Council is to counter more effectively some of the worst and most irresponsible TV programming. This was announced to a scattering of journalists by seven prominent skeptics: Kurtz, Adams, Dutch astronomer Cornelis de Jager, physician Wallace Sampson, Joe Nickell, John Maddox, Kendrick Frazier, and communications researcher George Gerbner. All but Joe Nickell are over fifty. All are male. I personally probably watch more TV in a week than they do combined.

A few journalists polled say what they want most is good, working

Conference continued on page 60

CSICOP Award Winners

Eight distinguished scientists, scholars, and journalists were honored by the Committee for the Scientific Investigation of Claims of the Paranormal on June 22, 1996, at the awards banquet of the first World Skeptics Congress—also CSICOP's twentieth-anniversary conference, "Science in the Age of (Mis)Information"—in Buffalo, New York.

Isaac Asimov Award

Stephen Jay Gould, professor of geology, zoology, and history of science at Harvard University, was presented this award in recognition of his outstanding commitment and ability in communicating the achievements, methods, and issues of science to the public. The one previous recipient of this award was Carl Sagan in 1994.

In Praise of Reason Award

Leon Lederman, Emeritus Director of Fermilab and Nobel laureate in physics, was presented this award in recognition of his distinguished contribution to the use of critical inquiry, scientific evidence, and reason in evaluating claims to knowledge.

Previous winners of the In Praise of Reason Award are Martin Gardner (1982), Sidney Hook (1984), Antony Flew (1985), Stephen Jay Gould (1986), Carl Sagan (1987), Douglas Hofstadter (1988), Cornelis de Jager (1990), Gerard Piel (1990), Donald Johanson (1991), Richard Dawkins (1992), and Elizabeth Loftus (1994).

Public Education in Science Award

Dean Edell, national radio medical commentator, was presented this award in recognition of his distinguished contribution to the public's understanding of science and scientific principles.

Previous winners of the Public Education in Science Award are Richard Berendzen (1990), Eugenie Scott (1991), Sergei Kapitza (1992), and John Maddox (1994).

The Martin Gardner Lifetime Achievement Award

Steve Allen, author and entertainer, was presented this award in recognition of his lifetime achievement in cultivating the public appreciation of critical thinking and science.

Responsibility in Journalism Award

Three journalists—**Philip Adams,** columnist, radio moderator, Australia; **Piero Angela,** journalist, television moderator, author, Italy; **Pierre Berton,** historian, author, broadcaster, Canada—were presented this award in recognition of their outstanding contribution to fair and balanced reporting of paranormal claims.

Previous recipients of the Responsibility in Journalism Award are David Yost (1984), Leon Jaroff (1984), Boyce Rensberger (1986), Ward Lucas (1986), Ed Busch (1987), Michael Willesee (1987), Lee Dembart (1987), Eugene Emery (1988), Stephen Doig (1990), Keay Davidson (1991), Mark Curtis (1991), Andrew Skolnick (1992), Henry Gordon (1992), and Jack Smith (1994).

Distinguished Skeptic Award

James Randi, conjurer and author, was presented the Distinguished Skeptic Award in recognition of his outstanding achievements in communicating to the public an appreciation for the methods of scientific inquiry and the scientific outlook.

Previous winners of the Distinguished Skeptic Award are: Henri Broch (1990), Susan Blackmore (1991), Evry Schatzman (1992), and Philip J. Klass (1994).

In past years CSICOP has given a Frontiers of Science and Technology Award. Past winners of this award are: Paul MacCready (1986) and Murray Gell-Mann (1987).

Compiled by Stephanie Damon, staff member at CSICOP and previously on the staff at Prometheus Books.

CSICOP Announces Creation of Council to Monitor Paranormal, Pseudoscience on TV

The establishment of a new Council for Media Integrity was announced June 20 at the opening news conference of the first World Skeptics Congress. The Council is sponsored by the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP). The charter members of the Council include many distinguished figures from the world of science and academia: Glenn T. Seaborg, Nobel Prize-winner for chemistry; George Gerbner, professor of communications, University of Pennsylvania; Stephen Jay Gould, zoologist, Harvard University; Gerald Holton, physicist, Harvard University; Sir John Maddox, editor emeritus, *Nature* magazine; Eugenie Scott, anthropologist and director of the National Center for Science Education, Berkeley; Gerard Piel, former president, American Association for the Advancement of Science and former publisher of *Scientific American*; Wallace Sampson, M.D., Stanford University; Kendrick Frazier, editor, SKEPTICAL INQUIRER; Steve Allen, popular TV entertainer and author; John Rennie, editor, *Scientific American*; Alun Anderson, editor, *New Scientist*; and Carl Sagan, astronomer, Cornell Univeristy, among others.

According to Paul Kurtz, chairman of CSICOP, "The media have now virtually replaced the schools, colleges, and universities as the main source of information for the general public . . . the irresponsibility of the media in the area of science and the paranormal is a worldwide problem. But it especially applies to the United States, where the media have been distorting science and, in particular, presenting pseudoscience as genuine science. Indeed, we are appalled by the number of 'documentaries,' which are really entertainment programs, presenting fringe science as real science.

"The major networks have been running two or three such specials almost every month. Recently there have been programs on prophecies, astrology, psychic powers, creationism, Noah's Ark, angels, alien abductions, etc. This is in addition to the popular *Unsolved Mysteries, X-Files,* and *Sightings,* as well as new programs such as *Paranormal Borderlands,* and *Poltergeist.*"

The Council noted that on June 8, NBC rebroadcast "The Mysterious Origins of Man," narrated by Charlton Heston. The program promoted pseudoscience and suggested that evolution is questionable, that human civilization originated 100 million years ago, and that humans coexisted with dinosaurs. The program, originally broadcast in February, raised protests from the scientific community, which NBC ignored. It also broadcast the fourth in a series of "Prophecies," which provided questionable scenarios of the end of the world.

The Council also complained about the many talk shows devoted to the paranormal, in which claims in favor of the paranormal are given a platform but skeptical dissent is rarely heard. A statement endorsed by members of the Council maintained that, "If the United States is to continue to provide leadership and compete in the global economy, then we need to raise the level of scientific literacy and understanding of the general public.

"We are not, of course, asking that TV producers not run these shows or make a profit. We surely do not wish to censor the media. We only ask that they provide some balance and provide some appreciation of the scientific approach. The new Council will monitor such programs, and attempt to persuade producers, directors, writers, and the general public to leave room for the appreciation of scientific methods of inquiry.

"We realize that the media are being attacked from all sides, but we think that a plea for raising the level of understanding of science should be heard."

Asteroids Named for CSICOP and Founder Paul Kurtz

The contributions to public education of the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP) have earned both the organization and its founder, Paul Kurtz, cosmic honors. An asteroid has been named for CSICOP, and another asteroid has been named for Kurtz, a surprise announcement at CSICOP's twentieth-anniversary conference revealed.

The honor to CSICOP recognizes its contributions to science education and skepticism and was timed to coincide with its twentieth birthday. The International Astronomical Union (IAU), the body that officially names asteroids, accelerated its procedures so that the names would be approved in time to be announced at the conference, says CSICOP scientific and technical consultant James McGaha, director of the Grasslands Observatory in Tucson. McGaha initiated the process and made the announcement at CSICOP's Saturday night awards banquet, June 22. Kurtz, CSICOP's founding chairman, was not told of either honor in advance.

CSICOP's asteroid—its numerical designation is 1982 VA1 (6630)—was discovered November 15, 1982, by E. Bowell at the Anderson Mesa Station of Lowell Observatory. Although named *for* CSICOP, its actual name will apparently be "Skepticus," from the Greek word for skeptic. McGaha says the IAU preferred that to an acronym.

Here are the complete citations:

Skepticus 6630 CSICOP, U.S. Organization

Named for the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP) on its 20th anniversary. CSICOP is a nonprofit education organization, founded in 1976 to investigate paranormal, occult, and fringe claims, using rigorous scientific methodology. Articles and reports generated by investigation are published in its journal *The Skeptical Inquirer*. CSICOP has spawned a grassroots movement of some seventy autonomous groups worldwide. Through public education and outreach, CSICOP has become a voice of reason to counter pseudoscience and superstition.

Kurtz 6629 U.S. Philosopher

Named in honor of Paul Kurtz (1925–) of State University of New York at Buffalo. Kurtz is professor emeritus of philosophy, chairman and founder of the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP), chairman of the Council for Secular Humanism, and founder and chairman of Prometheus Books. A noted author and philosopher, he has written over 30 books and 650 articles on philosophy, humanism, and skepticism. He has been influential in bringing philosophy back from a pure analytical study to a more activist stance. Kurtz actively promotes science and refutation of pseudoscience.

These asteroids join asteroids Gardner and Randi (for Martin Gardner and James Randi) among asteroids named after prominent skeptical authors and investigators. The designation of Randi's asteroid came this spring.

Noreen Renier 'Put to the Test' —Hollywood TV Style

I can vaguely recall a weekly television program from the '50s called *Stump the Stars,* in which regulars Ross Martin and Beverly Garland, I assume with some degree of success, would attempt to determine the answer to something (hey, I was probably still in diapers!).

Less anciently, *What's My Line?* and *I've Got a Secret* were TV staples, and my recollections of these programs are much more vivid. I believe I can report authoritatively that the "lines" and "secrets" were very often correctly determined by the celebrity panelists. I believe I can further report, without fear of contradiction, that despite their successes week after week, Kitty Carlisle and company made no claims of "psychic" ability.

A much more pretentious incarnation of these variations of the children's games of "hot and cold" and "twenty questions" aired most recently on April 29, when Orlando, Florida, "psychic detective" Noreen Renier was one of three subjects on the ABC-TV program *Put to the Test.* The show's purpose, as explained up front, is to "challenge our basic understanding of what can be, and what we've come to accept as truth," by subjecting the guests' claims to "objective" testing.

Renier's segment begins with her looking into the camera and making this modest claim: "If you give me the first name of a victim and something from that crime scene, I can tell you who did it, and how it happened." Her resumé is then summarized, and testimonials of praise are offered by Capt. Robert Miller of the Ft. Pierce, Florida, Sheriff's Department and retired New York Detective Ray Krolak (see reference to Krolak in my chapter on Renier in *Psychic Sleuths,* edited by Joe Nickell, Prometheus Books, 1994).

Renier's test, conducted at her home "over a two-day period," involved three previously solved Glendale, California, homicides. We are informed that on day one "the results were split," although Renier was "accurate on over seventy-five percent of the facts." A "day two" case was selected for showing—that of an eighty-nine-year-old woman named Josephine, who was brutally murdered in 1994. Appearing in the room with Renier are Alison Holloway (one of the show's hosts), Glendale Police Department Sgt. Jon Perkins, and a retired judge to monitor the proceedings.

Renier is handed Josephine's hearing aid, and she then begins to describe the killer: "I feel some [increased] width to the mouth. Might be a strong overbite. Lips—short." To my eyes, she was wrong on all three counts, and her associate's composite sketch, unveiled later, seemed to me to bear little resemblance to the killer's face.

But her "psychic" reading of the crime was more (excuse the pun) dead-on. As Sgt. Perkins, who had worked the case, conducted the questioning, Renier described the place where the murder occurred: "It seems like there's a lot of white in it. And there's some strong slant . . . with the roof. . . . A house or church, or a house near a church. Screen door creaks." Even if Renier did not research the Glendale newspapers and scout the murder site in advance of the test (how many Josephines could have been murdered there recently?), her description may be reasonably representative of many homes in the area. (Interestingly, although the actual screen door does not "creak," it does, like many, scrape loudly along the porch surface.)

Now the game of "hot and cold" begins in earnest, as Renier offers bits and pieces of her "psychic" vision to Perkins, who plays dutifully along:

> Renier: In the [killer's] name or associated with him in some way I see [the letter] "J" again.
>
> Perkins: I can't confirm that. (This skeptic's comment: "Cold.")
>
> R: She was sitting, standing, back turned. There would have been some blows from the back, or from behind.
>
> P: I can't confirm that. (Good try, though.)
>
> R: Close together, or lived together, or close together. I don't know. Is that right? Is that right?
>
> P: Yes, I can confirm that. (What? OK, the killer did live very close by.)
>
> R: I feel a relative, a friend of a relative is involved.
>
> P: I can confirm "a relative" or "friend of." (The murderer was actually a "friend"/neighbor of the *victim,* not a relative or a friend of a relative.)

At this point, the taped replay of the session is interrupted with a brief description by Holloway of how the murder occurred. When they return to Renier, it cannot be determined if she correctly found her way into the kitchen without the assistance of Perkin's feedback.

> Renier: Maybe some weapon that was in the kitchen could have been used.
>
> Perkins: OK. Can you describe the weapon?
>
> R: A knife? (Logical deduction, even if tentatively offered. But a "psychic" might have discerned the nonobvious—it was a *pocket* knife!)
>
> P: OK, where are we going to move to? Can you see that?
>
> R: I think we go through two more doorways. (You mean we move from one room to another one? Given the last hint, even *I* can confirm *that!*)
>
> P: OK, I can confirm that.

I cannot assert with certainty if Renier's "success" thus far is the result of mere intuition, prior knowledge, Perkins' feedback, "psychic" power, or some combination thereof. What I can assert with certainty is that once she "psychically" enters the bedroom, Renier's play-acting becomes painfully absurd. A knife already having been established as one of two murder weapons, the viewer is treated to the

Fund for the Future

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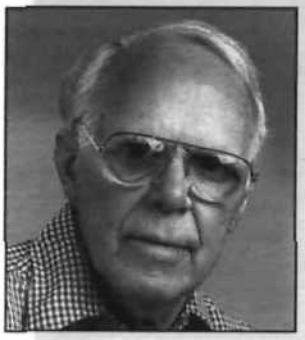

Martin Gardner
Honorary Co-chair

Steve Allen
Honorary Co-chair

Human beings have never understood the material universe as thoroughly as they do today. Yet never has popular hunger for superstition, pseudoscience, and the paranormal been so acute.

CSICOP and the *Skeptical Inquirer* are leading advocates for skepticism nationally and worldwide. But so much more must be done in the years to come.

The New Ten-Year Plan

To continue its leadership in the defense of reason, CSICOP has articulated a Ten-Year Plan designed to:

- *Promote science and reason*
- *Develop public support and participation*
- *Develop The Center for Inquiry as an education and research center*
- *Build up the Committee's resources*

Publishing revenues alone cannot fund the bold outreach today's challenges demand. Hence the Fund for the Future Campaign, a ten-year effort to add 20 million dollars to the Center for Inquiry endowments.* Gifts and endowment income will fund projects including:

Council for Media Integrity

Formed just weeks after its inclusion in the Ten-Year Plan, the Council for Media Integrity will monitor and rebut media programs that convey unfounded claims and mislead the public about science. Members include Steve Allen (chair), Carl Sagan, Stephen Jay Gould, and many others. CSICOP will invest in electronic infrastructure to facilitate rapid response to irresponsible programs.

Adult Education

The Council cosponsors the Center for Inquiry Institute, which has already expanded its offerings to include a new three-year certificate program in science and skepticism. Sessions are scheduled in Amherst and Los Angeles.

Enhancing Library Resources

The Center for Inquiry's skeptics' library—already the finest of its kind in the world—needs expanded funding to enlarge its core collection and add electronic media. Worldwide modem access to the library's catalog is already nearly complete.

For the Young

To present skeptics' message more compellingly to the young, CSICOP will develop new materials—ranging from age-appropriate print publications to audio and video cassettes and instructional courseware. Goals include enhanced understanding of science and improved critical thinking skills.

Regional Outreach

With the establishment of The Center for Inquiry – West (Los Angeles), The Center for Inquiry – Midwest (Kansas City) and The Center for Inquiry – Rockies (Boulder, Colo.), giant steps have been taken to enhance direct field service to skeptical activists. Additional regional Centers are planned with expanded calendars of activities.

*Combined endowment goal of CSICOP and the Council for Secular Humanism, both nonprofit tax-exempt educational organizations.

How Can I Help?

The Center for Inquiry Fund for the Future depends on generous support from each of our readers and friends. Gifts of cash, securities and other assets are sought. A three-year pledge can make more substantial gifts surprisingly affordable. Many forms of planned giving arrangements can be arranged. All requests will be held in confidence.

Only financial support from skeptics and other friends of science can place the skeptical movement on a firm financial foundation.

At the first World Skeptics Congress in Amherst, New York, participants gave or pledged an unprecedented $201,000 to give the Fund for the Future campaign a vigorous start.

We invite you to make your commitment to the Fund for the Future today. For more information, complete and mail the postpaid reply card.

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spectacle of Renier simulating a repeating stabbing motion with her right arm: "I get this motion with him, and I don't quite know what this motion is. But I keep doing this. And I have sort of a lunge-and-pull-back, and lunge-and-pull-back motion." She then immediately makes a series of campy-looking puffing faces and sounds, as if exhausted from reliving the kill. Even if I were initially inclined to believe in her "psychic" powers, this ridiculous acting and feigning of ignorance would be a dead giveaway.

As the test approaches its conclusion, Holloway says, "Noreen [then] had her most startling vision of the reading—a fact that was never printed in the newspaper, never testified to in court, a fact no one but the investigators knew. David had hidden one of the murder weapons in the oven." Renier to Perkins: "I think you had trouble finding one weapon. Uh, there was a little disguise in the one weapon." Perkins: "I can confirm that." But Renier does not *say* that the knife had been hidden in the oven. And if this *one* "vision" was the "most startling" of them all because it involved *one fact* that *had not been previously publicized,* does this not imply that Renier indeed had an opportunity (whether or not she availed herself of it) to come up with her other "visions" through prior research?

When the Renier-inspired sketch of the killer was shown to Perkins at the conclusion of the test, he rated it as "very accurate . . . a strong 7 [or] weak 8" (I'd give it a "strong" 3). He added, "I think she was probably ninety percent accurate on the facts and the information that occurred during the course of this murder." But even if she was, did she exhibit sufficient evidence of "psychic" power to cause a rational, critically thinking person to reassess his or her skepticism of the paranormal? Haven't magicians, psychology instructors, and others regularly performed similarly "accurate" readings, to demonstrate for the public how easy it is to *simulate* "psychic" power?

In my chapter on Renier in *Psychic Sleuths,* I describe on page 80 a simple test protocol that would allow, with mathematical precision, a determination as to whether or not her "psychic" powers are genuine. Renier wanted no part of such a test, not even for the Tampa Bay Skeptics' "$1,000 Challenge" ($1,000 is offered to anyone who can successfully demonstrate psychic powers under scientific, controlled conditions). And not even the lure of James Randi's new "2000 Club" jackpot (a similar challenge to anyone who can demonstrate psychic powers under scientific, controlled conditions, now worth more than $600,000) has caused her to change her mind.

—*Gary P. Posner*

Gary P. Posner, a physician and medical software company executive, is founder of the Tampa Bay Skeptics and a CSICOP Consultant.

Goatsucker Hysteria

Mimicking the "cattle mutilation" hype of yesteryear, reports of a bloodthirsty beast—El Chupacabras, or "the goatsucker"—have spread from Puerto Rico to Mexico and, more recently, to Florida.

According to the Cox News Service (April 1996), "The creature supposedly is part space alien, part vampire and part reptile, with long sharp claws, bulging eyes and a Dracula-like taste for sucking blood from neck bites." In Puerto Rico, where the myth originated in late 1995, "the creature has spawned something near hysteria."

It reportedly attacked turkeys, goats, rabbits, dogs, cats, cows, and horses, sucking all the blood from them. However, as Reuters reported, the Puerto Rico Agriculture Department dispatched a veterinarian to investigate. Officials then announced that all the animals had died under normal circumstances and that, contrary to claims, not one had been bled dry.

When the scare spread to Mexico in April, a scientific team staked out farmyards where the goatsucker had reportedly struck. Wild dogs were caught each time. A police official remarked, "I don't know about the rest of Mexico or the rest of the world, but here the goatsuckers are just dogs." He added: "There is just this huge psychosis. You see it everywhere, even though everywhere we go we prove that there aren't any extraterrestrials or vampires."

Investigating for CSICOP, Patricia and Mario Mendez-Acosta of Mexico City interviewed several veterinarian pathologists who had conducted numerous autopsies on alleged victims of the goatsucker. Again, in every instance blood was still present in the animal.

Some news sources reported that a nurse who lived in a village near Mexico City had been attacked by the goatsucker. Actually, she simply fell and broke her arm but her cries for help were misinterpreted by her grandmother, and neighbors rushing to her aid saw a black-winged form. In reality, that was a flock of swallows, but thus the rumor was born. In another Mexican incident, a man who claimed he had been attacked by the goatsucker later confessed that was a cover story for his having participated in a brawl (*Los Angeles Times,* May 19, 1996).

Largely through Miami's Latin radio and television stations, the collective delusion spread to the Sunshine State. Prompted by local authorities and surrounded by members of the news media, a University of Miami veterinary professor, Alan Herron, cut open a dead goat to demonstrate that it had merely been bitten, not emptied of its blood. Citing the bite wounds that were "suggestive of predation," Professor Herron concluded, "A pack of wild dogs did it."

"Of course," reported the Cox News Service, "that did little to calm the Chupacabras frenzy."

—*Joe Nickell*

Isaac Newton: Alchemist and Fundamentalist

And from my pillow, looking
forth by light
Of moon or favouring stars,
I could behold
The antechapel where the
statue stood
Of Newton with his prism and
silent face,
The marble index of a mind
for ever
Voyaging through strange seas
of Thought, alone.

—William Wordsworth, *Prelude,*
Book 3, lines 58-63

There are three Sir Isaac Newtons. For several centuries the best-known Newton has been the great mathematical physicist who in his early twenties invented calculus, discovered the binominal theorem, introduced polar coordinates, proved that white light was a mixture of colors, explained the rainbow, built the first reflecting telescope, and showed that the force causing apples to fall is the same as the force that guides the planets, moons, and comets, and produces tides. His discoveries revolutionized physics. His genius is undisputed.

Unknown to most people, even today, are two other Newtons. One is the alchemist who struggled for decades to turn base metals into gold. The other is Newton the Protestant fundamentalist.

Newton worked quietly alone, almost in secret, on his great discoveries. His classic *Philosophiae naturalis principia mathematica* was not published until twenty years after his youthful achievements, and then only at the insistence of astronomer Edmund Halley, for whom the comet is named, and who funded the book's publication. For a large part of his life Newton's time and energy were devoted to fruitless alchemy experiments and efforts to interpret Biblical prophecy. His handwritten manuscripts on those topics far exceed his writings about physics. They constitute several million words now scattered in the rare book rooms of libraries and in private collections. The American philosopher Richard Popkin is currently working on a twelve-volume edition of these manuscripts.

Although other scientists of the time, notably Robert Boyle, were interested in alchemy, none was as obsessively occupied with such research as Newton. He read all the old books on alchemy he could find, accumulating more than 150 for his library. He built furnaces for endless experiments and left about a million words on the topic. He thought of himself as working within a secret occult tradition of wisdom that traced back to Earth's earliest history. He even suspected that the ancients had known the inverse-square law of gravity!

It is with Newton's fundamentalism that this essay is mainly concerned. He was a devout Anglican, firmly believing the Bible to be God's revelation, although he granted that the original texts had been heavily corrupted by an unscrupulous Roman Church. He accepted the Genesis account of creation in six literal days, the temptation and fall of Adam and Eve, Noah's Ark and the universal flood, the blood atonement of Jesus, his birth by a virgin, his bodily resurrection, and the eternal life of our souls in heaven or hell. He never doubted the reality of angels and demons, and a Satan destined on judgment day to be cast into a lake of fire. Bishop James Ussher, the seventeenth-century Irish scholar, had settled on 4004 B.C. as the year of creation. Newton revised it in the wrong direction by making it five hundred years later!

Newton's universe was a vast machine operating by laws created and upheld by a personal yet transcendent deity. Infinite space was God's "Sensoriam"—the means by which he observed and controlled the cosmos. Although for Kant and later admirers of Newton the universe was deterministic, never deviating from unalterable laws, Newton was convinced that from time to time God needed to adjust the orbits of planets to keep them free of perturbations caused by comets and other forces.

This notion that God has to tinker with the universe to repair it struck Newton's German rival, the great philosopher-mathematician Leibniz, as

blasphemous. If God is perfect, omnipotent and omniscient as Newton believed, why, Leibniz wanted to know, would he create a universe so flawed that it would require perpetual adjustments?

Newton had no use for pantheism. His God was the God of the Bible, in whose image we were created, but so wholly other that we cannot comprehend how we resemble him. Newton's greatest departure from the prevailing religion of England was his rejection of the trinity. He was an Arian (forerunner of Unitarianism) for whom Jesus was indeed the divine Son of God, but in no way equal to God. Trinitarianism, Newton believed, was a crude heresy concocted by the Roman Church in the fourth and fifth centuries. He kept this belief to himself, knowing well that if it became known he would be expelled from his Cambridge college, ironically called Trinity, where he was a professor of mathematics for twenty-six years. It later would have endangered his job at the Royal Mint where he worked for the last half of a long life. He was a diligent servant, overseeing England's currency and merciless in sending counterfeiters to the gallows. He was the first to recommend gold as a monetary standard.

For Newton, the beautiful patterns of the material universe were overwhelming evidence of God's creative powers. As an example, he singled out the fact that all the planets revolve on the same plane, in the same direction, with just enough centripetal force to keep them from crashing into the sun. Newton was puzzled by the fact that gravity seemed to operate instantaneously at a distance. He admitted he could do no more than describe it without comprehending how it worked. Not until Einstein's general theory of relativity was gravity changed from a "force" to the movement of matter along the shortest paths in a curved space-time. As physicist John Wheeler likes to say, the stars tell space-time how to bend, and space-time tells the stars how to go.

Martin Gardner's latest book is The Night Is Large: Collected Essays, 1938-1995 *(St. Martin's Press), published in July 1996.*

Both space and time were for Newton absolute. Space was a fixed, infinite, unmoving metric against which absolute motions could be measured. His proof of this was the centrifugal force produced by rotating bodies, and which he correctly guessed had caused the earth to bulge at its equator. It would be foolish, he argued, to suppose that a rotating bucket of water, which tossed water over its sides, was at rest with the entire universe spinning around it. There was no way, of course, he could have conceived of general relativity in which even rotary motion is relative, but how he would relish it were he to return to earth today! "Newton, forgive me," Einstein once wrote.

Nor can we fault Newton for not understanding cosmological and biological evolution. Like so many theists before and after, he saw the intricate patterns of life forms as another proof of God's wondrous handiwork. He was particularly impressed by bilateral symmetry:

> Can it be by accident that all birds, beasts and men have their right side and left side alike shaped (except in their bowels), and just two eyes and no more on either side the face, and just two ears on either side the head, and nose with two holes and no more between the eyes, and one mouth under the nose, and either two forelegs or two wings or two arms on the shoulders, and two legs on the hips, one on either side and no more?

Would Newton have accepted evolution had he lived after Darwin? If so, he would have considered it God's method of creation, though it would surely have demolished his belief in the accuracy of Genesis.

I also suspect that Newton, reincarnated today, would embrace quantum mechanics. Indeed, he thought that light consisted of particles, independent of space though somehow influenced by space. In quantum mechanics, light is both a wave and a particle called the photon.

Newton's passion for alchemy was exceeded only by his passion for Biblical prophecy. Incredible amounts of intellectual energy were spent trying to interpret the prophecies of Daniel in the Old Testament, and the Book of Revelation in the New. He left more than a million words on these subjects, seeing himself as one who for the first time was correctly judging both books. Having been so successful in solving some of the riddles of God's universe, he turned his talents toward trying to answer riddles posed by God's Holy Word.

Newton was firmly convinced that Daniel and the Apocalypse, when correctly deciphered, showed that Earth's history was about to end with the Second Coming of Jesus, followed by his judgment of the quick and the dead. In his youth Newton speculated on 1867 as a possible date for the Second Coming, but in later years decided it was folly to use the Bible for predicting the future. The best we can do is recognize successful predictions *after* the events occur. Like millions of Protestants in the seventeenth century, he believed the Papacy was the Antichrist foretold in the Apocalypse—an incarnation of Satan in his last, futile effort to thwart God's plan for cleansing the universe of sin. He accepted the prophecy that in the last days the Jews would return to Jerusalem and become Christians. The coming of Christ would be followed by a Millennium during which the Lord would rule over earth "with an iron hand." In his old age Newton moved the date of the Second Coming to some time after the end of the twenty-first century.

Six years after Newton's death his *Observations upon the Prophecies of Daniel and the Apocalypse of St. John* was published in London. It was reprinted in 1922, but amazingly has been unavailable since. The best summary of its contents known to me is a chapter in the second volume of Leroy Edwin Froom's *The Prophetic Faith of Our Fathers* (Review and Herald, 1950–54), a massive four-volume work by a Seventh-day Adventist historian. Froom greatly admired Newton's religious opinions. Many are shared by Adventists, including the identification of the Papacy with the Antichrist, and a belief that God created the universe through Jesus. Like the Adventists, Newton took

Sir Isaac Newton

the four parts of the metallic image in Daniel chapter 2 to symbolize the successive world powers of Babylon, Persia, Greece, and Rome. Like the Adventists, he took the growth of the "little horn" on the fourth beast in Daniel to represent the growth of the Papacy. What about 666, the mysterious number of the Beast in Revelation? Like today's Adventists, Newton believed we do not yet know its meaning. It would be interesting to compare Newton's exegesis of Biblical prophecy with the Adventist classic *Thoughts on the Book of Daniel and the Revelation,* an 1882 work by Uriah Smith.

To support his conviction that the Old Testament is accurate history, Newton worked out an elaborate chronology of Earth's history, drawing on astronomical data such as eclipses and star motions, and legend such as that of Jason and the Argonauts which he took to be genuine events. With incredible ingenuity he tried to harmonize Biblical history with secular histories of the ancient world. It is sad to envision the discoveries in mathematics and physics Newton might have made if his great intellect had not been diverted by such bizarre speculations.

Newton's writings on Biblical prophecy are so huge an embarrassment to his admirers that to this day they are downplayed or ignored. The long essay on Newton in *The Encyclopaedia Britannica*'s famous eleventh edition devotes only one brief paragraph to Newton's Bible studies. They are not mentioned at all in the fourteenth edition, and are allowed one paragraph in the *Macropaedia* of the current fifteenth edition.

What did Newton think of his great discoveries in physics? Amazingly, he seems to have considered them little more than youthful recreations. In a memorable, often quoted, passage he likened himself to a little boy "playing on the seashore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary whilst the great ocean of truth lay all undiscovered before me."

Newton's peculiar, introverted, self-absorbed personality is still an enigma. Contemporaries noticed his melancholy countenance. Although he occasionally smiled, he almost never laughed. A lifelong bachelor, he had not the slightest interest in sex. A few Freudian analysts, stressing the death of his father before he was born, have suggested that Newton was a repressed homosexual. The main evidence is that in his middle age Newton became infatuated with Nicolas Fatio de Duillier, an eccentric Swiss disciple twenty years his junior. Gale Christianson, in his 1984 biography of Newton, *In the Presence of the Creator,* strongly doubts any sex activity between the pair took place, but adds: "On the other hand, their correspondence—with its lavish praise, requited loneliness at separation, and melancholy swings of mood—bears haunting overtones of an ill-fated romance. The final break itself appears to have been prefigured in their agonizing desire to share the same chambers, a desire quite possibly overridden by the fear of what might happen if they were to attempt it."

Newton had no interest in music or art, and once dismissed poetry as "ingenious fiddle-faddle." He never exercised, had no recreational hobbies, no interest in games, and was so preoccupied with his work that he frequently forgot to eat or would eat standing up to save time. He had few friends, and even to them he was often quarrelsome and vindictive. In one of his letters to John Locke, his best friend among British philosophers, he wrote:

> Being of opinion that you endeavoured to embroil me wth woemen & by other means I was so much affected with it as that when one told me you were sickly & would not live I answered twere better if you were dead. I desire you to forgive me this uncharitableness.

Locke wrote back to grant forgiveness, and to express undimmed love and esteem.

Newton seldom credited other scientists with earlier work that had influenced him. Always insistent on getting full credit for his discoveries, he bitterly accused Leibniz, whose metaphysics he despised, of stealing his invention of calculus. It is now known that the two discoveries were independent. Newton's was earlier, but Leibniz had a superior notation.

A few years after the publication of *Principia,* Newton suffered a massive mental breakdown that took a year or more to overcome. It was marked by severe insomnia, deep depression, amnesia, loss of mental ability, and paranoid delusions of persecution. In recent years a few scholars have suggested he may have suffered from mercurial and other toxic metal poisoning caused by his alchemical experiments. Others have conjectured that throughout his life he was a manic-depressive with alternating moods of melancholy and happy activity. His breakdown was only the worst of such episodes.

When Newton's manuscripts on alchemy were sold in 1936 at a Sotheby auction, the economist John Maynard Keynes was the major buyer. In a brilliant speech on Newton, given at the Royal Society's Newton Tercentenary Celebration in 1947, Keynes spoke of having gone through some million of Newton's words on alchemy and found them "wholly devoid of scientific value." Newton's "deepest instincts were occult, esoteric—with a profound shrinking from the world—a rapt, consecrated, solitary perusing his studies by intense introspection, with a mental endurance perhaps never equaled."

As for Newton's discoveries in mathematics and physics, Keynes believed they resulted less from experiments than from an incredible intuition. Later Newton would dress them up with formal demonstrations and proofs which had little to do with the insights that seemed to enter his head by sheer magic. Keynes put it this way:

> In the eighteenth century and since, Newton came to be thought of as the first and greatest of the modern age of scientists, a rationalist, one who taught us to think on the lines of cold and untinctured reason. I do not see him in this light. I do not think that any one who has pored over the contents of that box which he packed up when he finally left Cambridge in 1696 and which, thought partly dispersed, have come down to us, can see him like that. Newton was not the first of the age of reason. He was the last of the magicians, the last of the Babylonians and Sumerians, the last great mind which looked out on the visible and intellectual world with the same eyes as those who began to build our intellectual inheritance rather less than 10,000 years ago. Isaac Newton, a posthumous child born with no father on Christmas Day, 1642, was the last wonderchild to whom the Magi could do sincere and appropriate homage.

My major references for working on this column are Richard Westfall's great biography of Newton, *Never at Rest* (1980); Frank Manuel's *The Religion of Isaac Newton* (1983); Bernard Cohen's sixty-page article on Newton in *The Dictionary of Scientific Biography* (1974); and two valuable papers by Richard Popkin: "Newton and the Origins of Fundamentalism," reprinted in *The Scientific Enterprise* (1992), edited by Edna Ullmann-Margalit, and "Newton and Fundamentalism," in *Essays on the Context, Nature, and Influence of Isaac Newton's Theology* (1990), by James Force and Popkin. Popkin makes a strong case for the enormous influence of Newton's Biblical exegesis on the early history of Protestant fundamentalism. □

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PSYCHIC VIBRATIONS

ROBERT SHEAFFER

Travels on the Extraterrestrial Highway

The State of Nevada appears to have pulled off another minor miracle, transforming a barren stretch of desert road into a major tourist destination. In this column (Spring 1992, 250) you were among the first to read of the tall tales surrounding the supposedly mysterious "Area 51," where UFOs galore could allegedly be seen by anyone who took the trouble to drive out near the tiny hamlet of Rachel along barren State Highway 375. This road is now officially designated the Extraterrestrial Highway by proclamation of Governor Bob Miller, who spoke at a brief ceremony April 18, 1996, and its speed limit is now posted as "Warp 7." Another sign warns of alien encounters "next 51 miles." When I drove that road in July of 1992, stopping off for lunch at the Little A'Le' Inn, the only evidence of space visitors were the drawings and blurry photos plastered all over the walls. Leaving Rachel for Tonopah, there was a sign reading "Next Gas 97 Miles," so I doubled back to buy a few more gallons just to be safe.

I suspect that sign will be coming down soon, if it hasn't already. Twentieth-Century Fox sent from Hollywood a whole convoy of movie stars, reporters, and film moguls to a ceremony in the hamlet of Rachel to promote its new blockbuster, *Independence Day,* a film about aliens attacking the earth. A base supposedly beneath Area 51 plays a key role in the movie. The studio is also planning to unveil a "monument" along the Extraterrestrial Highway intended to "serve as a beacon for possible 'close encounters' with visitors arriving from the far reaches of outer space," according to its press release.

While the local UFO hucksters were doing a brisker business than ever, not everybody in the UFOlogical realm was cheering. Area 51 promoter Glenn Campbell, who publishes a newsletter called *The Desert Rat* (http://www.ufomind.com/area51/desert_rat), warns that "the state is setting up naive tourists for arrest & film seizure along the tense & poorly marked military border near the highway," and he does have a valid point, as the guards who patrol the perimeter of the high-security Air Force test range take a dim view of the cat-and-mouse games being played by amateur intelligence-gathers. Campbell also points out that Twentieth-Century Fox's "UFO monument," whatever it may be, seems to have completely circumvented the normal process of permits and approvals, as state and federal agencies have nothing on file about it, which would seem to preclude anything being constructed. However, Chuck Clark of Rachel, author of the rival *Area 51 Handbook,* suggests that Campbell may be "a government plant" sent to confuse people. Perhaps giving expression to this discontent, certain pranksters "abducted" the studio's Las Vegas-to-Rachel caravan by posting official-looking signs for the "Extraterrestrial Highway," sending them miles out of their way on a wild UFO chase down dusty desert roads, bypassing the paved state highway. Campbell reports that at least forty cars and one tour bus were thus "abducted" to the edge of the high-security area before arriving, covered with dust, at the planned extraterrestrial rendezvous.

All the excitement over the new Extraterrestrial Highway has obscured the most exciting development on which Campbell has yet reported: extraterrestrial linguistics. An anonymous earthling who uses the alias "Jarod 2" (pronounced Jay-rod) claims to have conversed briefly with his original namesake, an extraterrestrial now in residence at Area 51. This Jarod (the original) is reputed to be a consultant-alien, one of several who are advising the U.S. government on how to reproduce their flying saucers. That one or more extraterrestrials are now resident at that site is not news. Several years ago, John Lear claimed that aliens had violated their treaty with earthlings, resulting in humans at Area 51 being eaten by aliens. Bob Lazar later told a story of a battle being waged by earthly bullets against ET Ray Guns (this column, Fall 1993, 23). However, nothing had previously been reported about the extraterrestrials' language.

Recently, Jarod 2 asked a group of

UFOlogists, "What is the most difficult language on earth to learn?" When somebody piped up and said "Hungarian" (I have no idea whether this is true or not), Jarod 2 said that was right, and claimed that the ETs speak Hungarian—actually, "a higher form of Hungarian." Or so he claimed to have been told by his supervisor at Area 51. Further evidence of this is that the extraterrestrials speak English words in Hungarian word-order during their terse conversations. "This is something we never expected," Campbell observes wryly. "The aliens can talk to Zsa Zsa Gabor! But it's a HIGHER FORM of Hungarian, so maybe they can talk to Eva Gabor now that she has passed on." Jarod 2 claims that the Area 51 project employed many skilled human linguists, but all of them were stumped trying to figure out this higher form of Hungarian. Campbell observes that he had previously suggested that "prudent investors consider boron as a possible growth commodity, since it is one product that Jarod says the aliens take from Earth. Now we suggest ambitious college students consider the benefits of Hungarian. Take a few introductory classes, and when the aliens reveal themselves you'll be way ahead of everyone else." Apparently eager to place himself at the head of that queue, Campbell recently traveled to Budapest, describing his trip in *Desert Rat.* While contemporary Hungary is indeed in a state of UFO excitement, Campbell found nothing that would directly confirm or refute Jarod 2's statements.

Other interesting tidbits from Jarod 2: The aliens keep clean by taking a "bug bath" (actually, a microbe shower). They enter a shower stall where microbes are sprayed onto the alien's skin, and "the good bacteria eat the bad bacteria," as he explains. The aliens do not eat as we do, but they apparently do drink liquids.

* * *

Everyone knows that Uri Geller's psychic powers can supposedly bend spoons, but it seems that the task of psychically deflecting footballs has proven much more difficult. The British newspaper *The Independent* reported on April 2 that "Mr. Geller has forsaken [psychic] espionage and fork-bending to try to help his local football team, Reading FC. After all, if you can bend forks, you can bend free kicks. Last season he concentrated all his powers by walking 48 miles to Wembley to watch Reading in a play-off for promotion to the Premier League, but they lost to Bolton and missed a penalty to boot. And this season they're staring relegation in the face. What went wrong?" Mr. Geller answered the question in an interview in *Q Magazine:* "It's going to be all right, I tell you. Don't give up hope. I might invite the players over to my home to give them a good surge of psychic energy. You have to do that sometimes because we only use 10 percent of our minds."

James Becker

Nonetheless, not only did the season go badly for Reading, but the team's mascot, a hamster named Miss Ellie, died. It was given a fitting burial in one of the goalmouths. However, no sooner was Miss Ellie at rest than the team's fortunes immediately turned around, starting with a 3-0 victory over a local rival which saved the team from relegation. More remarkably, goals are said to come particularly freely at Miss Ellie's end of the field, and many members of the team are convinced that they are receiving supernatural assistance from the dead hamster, and not Uri Geller. James "The Amazing" Randi, who has been debunking Geller's claims for years, writes, "I trust that Mr. Geller will act in a chivalrous manner, and will resist claiming that his powers, working over a period of several months, and not Miss Ellie's, achieved this small wonder. Respect for the dead would seem to be called for here, and I, for one, will not cast doubt upon the ability of a dead rodent to lead a football team to victory."

In the final chapter of the saga of psychic football, the *Reading Evening Post* reported on June 29 that "Uri Geller says England would be in the Euro '96 final if police had not stopped him from standing behind the goal. The Sonning psychic was about to move into position to 'beam' Gareth Southgate's penalty into the net when Met Police officers barred him." A spokesman for the Metropolitan Police said, "our officers would not have wanted to do anything that would have stopped England winning, but security had to be the first priority." They should have used a dead hamster. □

Shades of Meaning: Science Fiction as a New Metric

Science fiction can, and should, be used to explore paranormal and fringe-science issues in compelling, meaningful ways.

EUGENE R. STEWART

Man's search for meaning is a primary force in his life.

—Viktor E. Frankl, originator of logotherapy, or existentialist analysis

Literature seeks explicit meaning more often, and with more determination, than other categories of art. Science fiction is one of the branches of literature most concerned with meaning. It explicitly employs science in fiction to measure meaning in our future-shocked, technophobic, information-aging world. When meaning is successfully made clear, we call it "sense of wonder" and feel as if something almost mystical has been revealed. Isn't that feeling a primary force in all literature, all art, all human endeavor?

Introduction

Kendrick Frazier, Editor

What role does science fiction play in promoting good science and skepticism or, conversely, bad science and paranormal beliefs? In making use of both scientific and paranormal concepts, as well as powerful imagination, science fiction can inspire, entertain, educate, and . . . what else? Writer Eugene R. Stewart's essay deals with these and other related issues from his particular viewpoint. We then decided to ask three famous science fiction writers, Hal Clement, Greg Bear, and Frederik Pohl, for their views on the same topic.

If that *frisson* is sparked by fiction based solidly in reality, then meanings are deepened. Science fiction, by including science, searches for new expressions of the basic grandeur and wonder of the world as it really is, as it can be understood through science and logic.

This search, however, as well as science fiction's powerful capacity to use almost anything as grist for its mills, often leads writers into wistful, less-than-scientific inquiries. Gullibility, laziness, and self-delusion, even hoax and fraud, divert some writers from real science, which might require some difficult research, toward the false claims and fake magic of quick-and-dirty wonderments that can be sewn of whole cloth. These writers mistake the theatrical stage set for the world they can depict and the gasp of a startled audience for the sign of amazement prompted by real insight. It's the same as mistaking gore for horror or sex for love.

The amazing variety of source material and imagery science fiction can accommodate is one of this branch of literature's major strengths, if that variety can be kept under control. As Darrell Schweitzer pointed out in his excellent article, "The Necessity of Skepticism, Part Two" (*Science Fiction Review,* Autumn 1990, pp. 26-30), "The skeptical writer can take what he wants from those sources, but then deliberately builds something far richer, far more entertaining, far more meaningful. He can make forceful, convincing speculations or psychologically valid metaphors. He remains in control of his material."

Obviously, losing control of the search is like casting aside maps, charts, and native guides in favor of thrashing about randomly. Columbus may not have known what he'd found, but he knew how to get there and back again. Every good writer must navigate through treacherous waters where crystals heal, revenants speak, and magic means more than a chosen *MacGuffin* (term used by Alfred Hitchcock for any device that triggers action in a story).

Consider as an example that oldest and least substantial of companions from the supernatural realm, the ghost. Out of fashion, oft ridiculed, and better dressed than his or her invisible means of support would seem to allow, still the ghost lingers, haunting us. One of the publishers of Alison Lurie (Pulitzer Prize-winning author of adult and juvenile fiction and nonfiction that includes folktales, fairy tales, and legends), sponsored a ghost story contest recently. Is even science fiction a match for the ghost?

The ghost survives, defying skepticism, logic, and science. It provides a convenient jumping-off point for a discussion of things that go bump in our heads as we reach high or crouch low, as we try to find meaning in our fiction, our lives. After all, ghosts represent all those fogbanks of irrationality, credulousness, and worse, that threaten each seeker of meaning. They're the surrogates for everything Dianetics claims to deliver, everything New Age channelers pour forth, and for all the hokum holographic universe theories. So what can be said with any certainty about these restless spirits?

Ghosts exist, but we don't know what they are.

Stories of sightings, encounters, and even relationships with ghosts have been around as long as human memory serves. History may have more ghosts crammed into it than does literature, and many family histories have eerie stories of uncanny events. Ghosts abound.

Debate about what ghosts might be is as old as ghost stories themselves. From each teller of a ghostly tale, a skeptic, a doubter, or an unconvinced but interested investigator might be born. With each telling, every ghost story kindles new flames from that spark that keeps people wanting, *needing* to know.

All that remains from a cold analysis is the fact that people report ghosts. Some are hoaxers, some are in error, but many such people believe what they say. Does it matter whether a ghost is an external, objective phenomenon or an internal, subjective manifestation of our humanity?

The answer depends on how one feels about what ghosts *mean.*

For an atheist, ghosts promise only mockery and self-indulgence, the wishful thinking of true believers. For a theist, however, ghosts may mean evidence of an afterlife, of angelic help, or continued love from loved ones long gone. Agnostic minds, poised between extremes and awaiting further evidence, admit either possibility in theory, but claim data insufficient to determine which way to lean.

Few people are purely atheist, theist, or agnostic, however. Most of us just plain don't know what to think, but we might know, in our secret hearts, how we'd like it to turn out. Our hopes, dreams, and wishes combine into knots of faith difficult to unravel with blunt, clumsy words. Our lives, loves, and losses all clamor to convince us that existence simply *must* mean something. And it's that conviction of meaning that most infuses ghosts with perennial appeal.

Meaning, however, must be based on reality if it's to be anything other than self-delusion or blind faith. How, then, is reality determined? Is it decided by simple belief, or by the application of logic and scientific method? Science fiction can help us think about these matters. In the deft plotting and insightful characterization of a good science fiction story, even ghosts may be considered from revealing angles, in ways perhaps not permitted to the scientist. In other words, science fiction can be a form of thought experiment.

When Steven Spielberg's film *Poltergeist* appeared in 1982, viewers were treated to a quick overview of almost the entire field of parapsychology. Spielberg's approach to the subject matter of his films seems encyclopedic and all-inclusive, if not terribly skeptical. All's fair in entertainment, especially when it succeeds. In all modern films, technological advances allow new realism in the portrayal of the supernatural and impossible. George Lucas is revamping the special effects of his 1975 release *Star Wars* because technology now allows him do what he could only imagine 20 years ago. Neither Lucas nor Spielberg lets reality hinder or curtail his imagery. The science content of their films is low.

In *Poltergeist,* it is the family's emotions that are centered on the loss and recovery of the youngest child, a pattern with mythic resonance and eternal layers of meaning. (This is a horror movie of a family whose 5-year-old girl is abducted by a spirit that comes through the television set from a Native American burial ground beneath the family's home.) Each family member responds as an individual to the wild happenings, with the mother at first curious, even delighted, and the elder sister dubious, frightened, and ultimately disassociated, if not alienated. The father fights back any way he can, and in bafflement, turns to authorities and self-proclaimed experts, but only after he's exhausted his own resources. In short, he capitulates control of his search for meaning and casts his fate into other hands, other game plans. This parallels the dogmatic religious impulse and the true believer phenomenon.

In these behavior patterns can be seen society's structure: The characters seek meaning by performing standard roles, by fulfilling stereotypic duties. The mother is supportive, the siblings are at odds, and the father seeks control. Thus is a wild story line or plot hitched firmly to familiar, quotidian experience. Borrowing from myth, old frights meet new doubts, ancient angst is brought to modern suburbia, and so a kind of downscaled epic is launched. A descent into hell and the hero's return are presented in modern idiom as a kind of reinforcement of our humanity.

In the end (the family gets back the girl and flees to a motel as their house is annihilated by the poltergeist), the father, reconciled to having experienced something no one really understands, and ever seeking control, puts the motel room television set (by now a symbol of chaos) outside the room. Viewers laugh at that final irony, even while recognizing it as something we would all do. Order is restored, and meaning assured, even at the cost of a bit of rationality, a dollop of healthy skepticism. Spielberg opted for yet another of Hollywood's anti-intellectual, antiscience, antitechnology, pro-faith dénouements. Remember *Star Wars* and the casting aside of technology in favor of trusting "the force"? The science in fiction is often routed by myth.

A confirmation of the validity of family ties, of caring, of love, and the willingness to sacrifice self for others is the tangle of meanings gleaned from *Poltergeist.* In other words, a stamp of approval is placed on our general humanity. Beyond competence (as represented by the father), and unconditional love (the mother), *luck* sees us through, and we're grateful when things haven't changed beyond all recognition by the time our latest battle with chaos is done. If not quite a paean to entropy, it's at least a respectful nod to the inertia, the fake stability, found in the established order. In this, it shares traits with folktales and fairy tales. It endows the ghost with believability, not science. Faith counts more than fact.

And consider the film's initial premise: Underlying all the floating toys, hungry trees, indoor lightning, illusory maggots, disfigurations, regurgitated coffins, screaming demons, and ectoplasmic goo is the elegant and unsettling simplicity of the fact that reality might not behave always as we've come to expect. It's H. P. Lovecraft's crawling chaos, Nyarlathotep; it's the heart of a Stephen Hawking black hole; it's the core of Benoit Mandelbrot's fractals; in fact, it's Albert Einstein's assertion that, after all, physics as we know it might well be a local phenomenon.

"How, then, is reality determined? Is it decided by simple belief, or by the application of logic and the scientific method? Science fiction can help us think about these matters."

By the end of *Poltergeist,* however, order is restored, as it must be if we're to go on trudging through our well-filtered world. Rifts between family members and society are all repented, reconsecrated, and repaired. As in most things, the audience members ultimately seek reassurance that they're okay. Their parking has been validated once again.

Thus ghosts are seen as manifestations of chaos, the unknown, and their unknowable effect on our lives; foes to be fought if never quite defeated. And this is how too many people feel about science: That it's incomprehensible, beyond their control, and quite probably malevolent. They need better examples, it seems. Our popular fiction is often blatantly meaningful, stridently significant, albeit on a lowest common denominator level. Why don't we use it more often *for* science?

All things may ultimately find common ground in the human search for meaning, for significance. So Hamlet sees his father's ghost. What's it to me? Until the simple sighting of a long-dead monarch walking castle ramparts can be analyzed and comprehended, it seems superfluous: Another in-step charlatan and dupe eager to offer the latest explanation, usually a rehash of old nonsense. Shall pseudoscience then stake out the sole claim to our search for meanings on life's fringe? With traditional religion crumbling, and cults proliferating, we need rationality now more than ever (See *SI,* "Principles of Skepticism," May-June 1995).

And if one impossibility is discussed then all are tacitly under discussion, whether or not it's Lewis Carroll's breakfast time. When the normal rules of exclusion and usual categories are exceeded, or tossed out, then no one can limit the discussion to defined terms and nothing can be declared irrelevant. That's

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Brad Marshall

why cranks are so difficult to exorcise from serious inquiry into things paranormal and that's why established, "legitimate" scientists rarely want to wander far afield of their disciplines. They dare not risk being called *un*disciplined, or worse, fall into the trap of trying to prove a negative.

Art, as well as science, tries to find meaning; and science fiction in particular tries to make the search rational, understandable, and communicable, by thinking ahead, considering alternatives, and trying to plan for a realistic mental attitude toward change and adaptation. But of late too many seem to prefer thrashing about, hoping to stumble upon something. It's craft versus inspiration, Baroque versus Romantic, the scientific method versus divine revelation.

That doesn't mean the search for meaning is necessarily invalid, however, if, as many assert, it is the journey that counts most. We should cover our mouths when we scoff spontaneously, and beg pardon. After all, an insistence that there be room for ghosts, as well as for many other unexplained things, permeates humanity. We apparently want mystery, and we always have.

As Einstein wrote in his essay "The World As I See It," "The fairest thing we can experience is the mysterious. It is the fundamental emotion which stands at the cradle of true art and true science."

We want meaning, too, that can be seen as counterpoint to mystery. And who could deny the importance of the search for meaning; these days, there seems a particularly desperate *need* for meaning in all too many lives. Consider Einstein again from the same essay: "The man who regards his own life and that of his fellow-creatures as meaningless is not merely unfortunate but almost disqualified for life." Science fiction can be a method of bringing such meaning to the needy.

If our lives and this world mean nothing, then all is futile—and that thought is intolerable. Groups of scientists deny and dismiss such things as ghosts, yet talk about quantum mechanics as if Lewis Carroll's *Alice in Wonderland* were a blueprint. "In the world of quantum mechanics, the laws of physics that are familiar from the everyday world no longer work," scientist and writer John Gribbin tells us in his excellent book *In Search of Shrödinger's Cat.* Some of it, such as fractals and chaos theory, is downright counterintuitive and even scary. It's hair-raising when quantum mechanics starts talking about the observer creating the observed, and it requires real work to link the quantum with the cosmological, the singularity with the quotidian.

People sense a conflict of meanings when sober scientists tell them that Schrödinger's cat is neither dead nor alive, but poten-

tially both, and only observing one or the other affects the cat's state. As Niels Bohr said, "Anyone who is not shocked by quantum theory has not understood it."

People sense a dichotomy of meanings when they compare what science seems to say to what their life experiences seem to hint.

That's when admitting ignorance helps. Ghosts are not defined. We don't know what they are, whether they are hallucinations somehow hardwired into the human brain, or glimpses of other worlds, or afterlives, or tricks of light and shadow, or ripples of interference from some pure frequency realm, or more of gravy than the grave. That's the simple truth. We don't know. And admittedly some of the stories and ideas are so darned *appealing.*

Tests cannot be performed on anecdotes, however, and although demographic, statistical, and other analyses can be performed on anecdotal evidence, the results are descriptions, topographies, and inconclusive overviews. The nitty-gritty remains unreached, if it's there at all.

Maybe someday someone will come up with a new way of investigating such things, a way that answers more questions than it prompts. Until then we're stuck with being honest and that means, unfortunately, being undecided because to leap to a faith and decide on an answer would be to wallow in prejudice at this stage of our knowledge. "Undecided" is another way of saying "open-minded," meaning the question remains open. It may never be closed. And that possibility shouldn't stop us from checking into unusual claims as carefully and honestly as possible.

In literature, science fiction as a way of thinking helps us do that very thing in the same way that the scientific method as a way of thinking can help decide more tangible questions. It's in our nature to want structure and form.

This doesn't stop us, though, from wanting, and experiencing, and maybe even projecting meanings, too. Ay, there's the rub.

The fact that inexplicables have been with us for as long as we can remember, combined with the fact that they have never yet been defined, let alone explained, leads us to wonder why they hold such attraction for us. Why do supernatural ideas seem to hold such potential meaning? They attract like static cling and spark like lightning, such wonders.

Can the meaning be the mystery of ourselves?

Alone each anecdote of ghostly encounter sounds like a dream, and like a dream, it's of compelling interest to, and seems to hold the inexpressible meaning for, only the person who experienced it. "After a while these stories of ghosts all sound alike, and they don't add up to much," says Daniel Waltimire, writer and researcher of strange events. "I keep checking into them because there must be something to them, some meaning in all the madness. And I guess the search means something, too." It's exactly that search for meaning the science fiction can illuminate.

In aggregate the anecdotes convince us only that something's going on and that people are involved. Anecdotal evidence is never the best, but it's the best we have. That fact alone speaks volumes.

Be fair. Certainty shouldn't stem from pressure, no matter how graceful we prove to be while enduring it. Cool analysis shouldn't be attempted in the heat of the moment, and experience is but raw material for thought and meaning. Consider Ernest Hemingway's out-of-body experience when the bomb came down near him as he sat eating cold pasta with cheese. He captured the raw material of experience, then employing the facts as best he could, wrote it as truthfully in fiction as possible and left the finding of meaning to the reader. Science fiction's tropes permit just this sort of approach.

We must stress the difference between fact and truth. Great truths are to be found in much art, even in science fiction, lowly though that art may be, even as the factual content varies wildly, widely. And how often have we read ostensible nonfiction—today's newspaper will serve as example—that failed to convince us of its truth regardless of how stuffed with facts it might have been? And have you ever had an anxiety attack? Try telling yourself intellectually that everything's fine. Your emotions don't believe you. Parents know this dichotomy well, and often must struggle against feelings in order to do what they know intellectually to be rational, orderly, and right.

And of the argument that we'll believe it when we see it, consider that even ghosts, no matter what sort comes to mind, in or out of machines, are of relative importance only. If there are no atheists in foxholes, then the converse must also be acknowledged, that precious few people in foxholes can spare a moment to ponder metaphysical or philosophical questions. Like most of us most of the time, they're *busy.* We rarely give ghosts and their ilk time to affect our lives.

Ghosts, while bereft of *fact,* are fraught with *meaning.* Yet the nature, depth, and intensity of the meaning vary from individual to individual and perhaps even from moment to moment. Hauntings are not repeatable, ghosts don't stand still for measurements or other analysis, and they aren't predictable. Science fiction as a new metric can take such anomalies and fit them into orderly, rational, and at least human-controlled environments. This is one of science fiction's greatest services. As a way of thinking, as a tool for thought, science fiction can open closed minds.

Science fiction seeks meaning, even with ghosts, but it puts its money on the writers, readers, and thinkers among us. It employs restraint and form to release creativity, as in a sonnet. Ancient astronauts aren't needed in order to explain ancient monumental construction, because man is capable of more than the Erich von Danikens among us admit or imagine. And just because we can't do something now doesn't mean people couldn't have done it back then, all on their own. Extraordinary things flow every day from ordinary people.

It's not a matter of whether we believe in ghosts. What matters is whether we believe in *ourselves.* Both exist, but only one deserves a chance of proving the other a fake. What a grand

what if such a *Quod erat demonstrandum* would be.

Science fiction can act as a new metric for measuring meaning in our world. In this way, science fiction can be more than just popular. And it *is* popular. Most of the all-time popular movies have been science fiction. Isn't it time for the science in science fiction to reach out to its vast audience of seekers-after-meaning? Or will we let it all go Celestine soft?

Scientists in particular ought to rally. They ought to write science fiction with emphasis on science and show how astounding reality can be when clearly perceived, and use science fiction's elbow room to offer some balance to fringe science and the paranormal. Tackle the things real science won't touch. Fear no subject matter, and write as honestly as they can. Say what they mean, and meaning will accrue with interest in what they say.

Despite its garish, pulpy genesis and tendency to go soft and hollow, science fiction can remain relevant and continue to be the leading-edge literature of the possible and the real, if the science is emphasized by knowledgeable writers. Each time we read or write science fiction, we ought to take responsibility for a new aspect of humanity, and make sure it measures up.

Our restless shades exist in shades of meaning, shades as varied, subtle and complex as humanity itself.

> "The question is," said Humpty Dumpty, "Which is to be master, that's all."
>
> —Lewis Carroll, *Through the Looking-Glass*

Skepticism and Science Fiction

GREG BEAR

Is science fiction writing a guilty pleasure, or a social necessity? Both, I'm sure. Like sex and a good many other natural phenomena, art must be a little disreputable to be any good, and science fiction writing is nothing if not an art. But too much ill repute, and the art, like sex, turns sour.

The aim of science fiction (we must cry out again and again) is to entertain, but of course different audiences find different things entertaining. The audience I write for is particularly intrigued by the notion that we can think and feel our way into forward times, that we can open the darkly wrapped package of the future before the allowed Christmas morning. The enjoyable shiver of realization comes from a willing (but thoroughly skeptical) suspension of disbelief. Every step of the way, my audience is analyzing, correcting, criticizing—in short, playing a wonderful, interactive game of ideational tennis. If I falter at any point in my serve, the audience gives audible groans of disbelief, and the game is over!

It's a tough game. Perhaps the audience is not always as critical as I imagine, but I still watch every serve carefully. I know that someday a respected scientist or fellow science fiction writer is going to deliver a smashing return, shouting triumphantly: "Gotcha! If charge isn't conserved when you create matter and antimatter, it violates basic rules . . ." or "No isolated farming-based society would ever function that way, because . . ." or "Your female character is completely unbelievable in that situation, because. . . ."

In many respects, the rules for writing science fiction are similar to those for writing any kind of fiction. We just have to create many more aspects of the world. To create those aspects, we have to understand, at the very least, the *grammar* of reality: the syntax of real events, which helps us decide how future events might be constructed.

I believe that science fiction writing, at its finest, is an enormous leap of skeptical imagination. It is also a test of the writer, tougher than any other aesthetic test I know, for not only do we go up against a tough-minded audience (in principle, at least) but reality itself! In this respect, science fiction writing is quite perishable; as perishable as modern scientific knowledge, which is vulnerable to replacement and improvement.

If science fiction frequently deals with notions considered impossible by current science, that is hardly unscientific; we are reminded again and again of advances that destroy the impossibilities of past thinkers. The art is in choosing which impossibilities to shatter, which future advancements to promote to reality. Some writers lovingly cling to time travel and faster-than-light travel; others, to some form of psionic energy. I'm more doubtful about psionic energy than faster-than-light travel, but I'm willing to be persuaded—and not by some opportunistic self-deluding charlatan, but by a magnificent, entertaining, truly *talented* charlatan—that is, a real artist! The true artist, in science fiction at least, knows the difference between his or her fiction and reality.

The delusional, no-talent charlatans may scoop in more money, but the game is truly not worth the coin. I sleep much better at night than they should.

This brings up a case in point that illustrates the real role of skepticism in science fiction. Rumor has it that L. Ron Hubbard, a pretty good science fiction writer of the 1940s, made a conscious decision that science fiction was a mug's game, and that the real money was in starting a religion. So he did, using science fiction magazines and a gullible, though very famous, science fiction edi-

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tor to get his start. No one knows whether he eventually came to believe in what he wrote and sold to others as revealed truth. If I had been Hubbard, I would not have been able to convince myself.

I suspect most charlatans realize that they have perverted very real, very useful aesthetic instincts to hoodwink large numbers of gullible people into believing and paying.

When we stop being artists, and start being money-grubbing pseudoprophets, the net is down, the ball can go anywhere in the court, and the audience has changed. This audience knows so little, and cares so little about the truth, that it oohs and aahs at every random serve, every double bounce, every net ball. It does not perceive the difference between an earned point and a flub. The charlatan on the court smiles and receives applause for all. That's not our audience. That's not my game. □

The Goulden Twig

HAL CLEMENT

The late John Arrend Timm, most memorable of my chemistry professors, had the common difficulty with students who wanted to carry analogies like the solar-system image of the atom a trifle too far. I don't know how many times I heard him say with emphasis, and sometimes with a bit of annoyance, "Every analogy has its limitations; if it didn't it would be an identity."

Analogies seem to be a teaching necessity; learning something new that has no connection whatever with earlier experience is very, very difficult, and "Proceeding from the known to the unknown" is an almost universally accepted teaching technique. Even the fact that our imaginations have great difficulty in merging the wavelike and particlelike aspects of light has not, as far as I know, inspired any physics teacher to try to bypass both analogies entirely. (Observational selection may be operating here, of course; efforts simply may not have succeeded, so I never heard of them.)

At primary, secondary, and popular teaching levels, where the customer is likely to be unfamiliar with much mathematical symbology, we have to fall back on verbal and pictorial analogies. One of my favorites of these is used often by Stephen Jay Gould in his efforts to point out that evolution is not a simple tree trunk leading from "lower" to "higher" life forms. He pictures a bush, and employs various verbal techniques to convey the complexity and randomness of its branching, the essentially endless variety of directions the growth may take, and lack of preference for any particular one of these—that is, the absence of an upward-thrusting trunk.

I like to apply the same evolution analogy to the growth of human knowledge. It applies nicely to my personal interest, science. I may be grazing one of Dr. Gould's analogy limitations when I do this, because there does seem to be a direction of sorts to the knowledge growth—toward greater probability of correctness—but maybe this is an illusion and, like life varieties, we are merely expanding in all available directions.

I tend to concentrate on the individual twig. It follows a process of growth, starting with a bud of speculation. This grows to the length of a hypothesis, where testing of the increasingly detailed idea becomes possible. If it doesn't get nibbled off by a dinosaur (in other words, fail in testing), it reaches the status of a theory ("only" a theory, as the creationists put it) and becomes a real branch. The analogy does not extend to the idealistic level of representing a completely established fact, of course. This is all right; real life seldom does this either. It is conceivable, after all, that the earth is a cube embedded in a set of force fields which so alter gravitational, electric, and magnetic lines of force and the paths of electromagnetic waves and momentum vectors that we are deceived into thinking the planet nearly spherical (you could probably find someone who would regard this suggestion as sheer inspiration; *please* don't blame me for someone's misuse of an illustrative example).

In the bush analogy, my self-supporting hobby of science fiction plays a demonstrable part in the development of human ideas. It operates at the base of the branch, at the speculative start and a little way—sometimes quite a respectable way—out into the hypothesis sections.

There are speculations about parallel worlds, personality transposition, and life in the sun that, at least until recently, no one would have wanted to publish in any other form and for which no suggestions for testing have been offered. There are hypotheses, quite testable, on why craterlets on the floor of Plato (a 100-km-wide crater on the moon) are sometimes visible through a given telescope and sometimes not, under what seem to be identical viewing conditions. I suggested one, involving magnetic focusing of solar particles, some decades ago in *The Strolling Astronomer,* organ of the Association of Lunar and

Hal Clement (Harry Clement Stubbs) is one of the most scientifically oriented science fiction writers. His first story, "Proof," appeared in the June 1942 Astounding Science Fiction *(now* Analog*) magazine, and his first novel,* Needle *was serialized there in 1949. His best-known story (unfortunately, he feels), "Mission of Gravity," appeared in 1953. Other novels are* Iceworld, Close to Critical, Star Light, Still River, *and* Fossil. *He was a B-24 pilot in World War II and later a technical instructor, retiring as a full colonel in 1976. He has a B.S. in astronomy and an M.S. in chemistry and taught high school science for forty years.*

Planetary Observers. It produced a resounding silence among professional astronomers. However, I based a science fiction story, "Dust Rag," on the same idea a few years later; it sold readily, has been anthologized more than once since, and I have been told of its use in secondary school science classes. As far as I know, there has been no attempt to check the hypothesis directly, but the moon's more recently established lack of a significant magnetic field does make it unlikely. I can live with this.

Science fiction about space travel, sometimes with much detail about propulsion systems and orbit mechanics, by people like Willy Ley and Robert Heinlein, are far enough along the branch to let one hold on and climb. I invented for science fiction purposes in 1960 an astronomical body I called a "Superjovian." It has since become quite respectable under the name of "brown dwarf." (Discovery of the first brown dwarf, an object known as Gliese 229 B, has recently been confirmed by astronomers.)

I would say not to worry about the limits of this or any other analogy. It's better to have fun with the intellectual ecology to be found in and around the bush. □

Science Fiction and Scientific Possibilities

FREDERIK POHL

Eugene R. Stewart proposes an agenda for science fiction writers, but his article makes me wonder if he knows what science fiction is. The only work he discusses at any length is *Poltergeist,* which is not science fiction at all. *Poltergeist* is a kind of horror-fantasy, and that is a whole other breed of cat. The themes of fantasy derive from myth and superstition. Science fiction is reality-based. It deals with events that haven't happened yet, to be sure, and may well never happen at all. But the reader should be able to believe, while reading the story, that under some circumstances something very like those events just might come true . . . and no well person believes that about fantasy.

Can science fiction be used, as Stewart urges, "to explore paranormal and fringe-science issues"?

Perhaps. Despite what I said above, some science fiction writers have tried to apply the more or less orderly procedures of science fiction to the themes of fantasy. Among others, James Blish attempted to provide a scientific rationale for telepathy in his novel *Jack of Eagles*; Larry Niven and Robert A. Heinlein tried to do the same for magic in various works; others have occasionally tried to do so for werewolves, vampires, and even astrology.

Some entertaining stories resulted from these attempts. However, they could not have done much to further the objectives of CSICOP, namely: to counteract beliefs in superstition or the occult.

In fact, I fear that stories of this sort must inevitably go some way toward reinforcing these beliefs. Any attempt to use such stories to counteract superstition is foredoomed by the fact that, in order to discuss these paranormal phenomena in rational terms, the writer has to pretend that the ghosts and goblins and psychic phenomena are real in the first place . . . in effect, validating those beliefs rather than dispelling them.

Poltergeist suffers from one other problem in that it is a film, not a book or short story. Film does not offer a hospitable venue for intellectual discussion, because that is the nature of film: movies wonderfully stimulate the senses and excite the emotions, but of rational intellectual content there is seldom very much.

What science fiction can profitably do to counteract superstition is to explore the wonders of real scientific possibilities as they relate to the real world—even some possible future real world very far removed from present existence. But that is precisely what a great many science fiction writers have been doing—in print media, if not in film—for the last half-century and more.

If there is anyone not familiar with the field who is interested in seeing how this is done, she or he would be well advised to stay away from the moviehouses and go to a bookstore or the public library. I am reluctant to recommend specific works because to name a few is to leave out scores of others that are equally deserving, but some recent novels worth a look would include works by Ursula K. LeGuin, Kim Stanley Robinson, Greg Benford, Vernor Vinge, and many others. (They might even include some of my own books.)

It is true that, even in print science fiction, there is a vast number of stories which are as meretricious in their own way as any horror flick, but that's not surprising; it is only an example of Sturgeon's Law. That is the dictum laid down long ago by the late Theodore Sturgeon, one of the most gifted of science fiction (and also fantasy) writers. What Sturgeon's Law says is: "Ninety percent of science fiction is crud. But then, ninety percent of *everything* is crud." □

Frederik Pohl is a three-time Nebula award winner (including the "Grand Master" Nebula awarded for lifetime contributions to science fiction), a six-time Hugo award winner (he is the only person ever to have won the Hugo both as writer and as editor), and a past president of both World SF and the Science Fiction Writers of America. His most recent science fiction novels include Mining the Oort *and* The World at the End of Time.

Traditional Medicine and Pseudoscience in China: A Report of the Second CSICOP Delegation (Part 2)

This is the second of a two-part report of a recent CSICOP delegation to the People's Republic of China. In this article the authors describe their participation in a symposium on pseudoscience in China, held in Beijing, and their further interactions with practitioners of Traditional Chinese Medicine in Shanghai.

WALLACE SAMPSON AND BARRY L. BEYERSTEIN

In Part 1 of this report (*SI,* July/August 1996) we discussed the principles of Traditional Chinese Medicine (TCM) and our observations of how it is practiced today in the People's Republic of China. We also described research we had observed during our visit to China that is attempting to identify those empirically verifiable portions of TCM that could be incorporated into scientific medical practice. This opportunity was afforded us by an invitation from the China Association for Science and Technology (CAST) to visit various centers in China and to participate in a symposium on pseudoscience held in Beijing in June of 1995. In this article we address the broader topic of the growth of pseudoscience in China, and present additional

observations of TCM as seen in centers in Shanghai.

The CAST Symposium

Part of our stay in Beijing was occupied by a seminar sponsored by CAST and the State Science and Technology Commission. There, Chinese scholars and physicians described the problems created by pseudoscience in their country. These authors and their fellow member of the delegation (Andrew Skolnick of the *Journal of the American Medical Association*) traded similar experiences from the U.S. and Canada. We had expected this to be one of the highlights of our trip, and we were not disappointed. CAST had assembled an impressive roster of social, physical, and medical scientists from various parts of China who described the obstacles that belief in Qigong[1] and some of the extreme claims of TCM have put in the way of their efforts to improve scientific literacy. From these presentations we achieved many insights that would otherwise have been much more speculative.

Brain research laboratory at the Department of Neurobiology, Shanghai Medical University.

All Chinese speakers at the symposium made a clear distinction between "internal Qi" and "external Qi." The former equates roughly to what we would call "psychosomatic medicine"; while believers consider the latter to be a supernatural life force that, like psychokinesis, can affect matter outside one's body (believers refer to this as "special ability" or "extraordinary functions of the human body"). Belief in this dubious power was repeatedly defined at the symposium as China's major pseudoscience problem. Qigong was briefly outlawed during the cultural revolution (1966–1976) because it seemed too spiritual for the reigning Marxist materialists. It has since managed to stage a comeback by masquerading as a science. Qigong masters and their disciples routinely defraud the public with conjuring tricks and falsely present themselves as spiritual healers (Lin et al., in press). Honest practitioners of TCM eschew such deceptive practices, but they still adhere to the mystical notion that an imbalance of internal Qi energy underlies all illness. Many of the TCM doctors we interviewed still believe that specially gifted healers can use their external Qi to cure diseases by restoring the balance of a sufferer's internal Qi.

A few Chinese scientists we met maintained that although Qi is merely a metaphor, it is still a useful physiological abstraction (e.g., that the related concepts of Yin and Yang parallel modern scientific notions of endocrinologic and metabolic feedback mechanisms). They see this as a useful way to unite Eastern and Western medicine. Their more hard-nosed colleagues quietly dismissed Qi as only a philosophy, bearing no tangible relationship to modern physiology and medicine.[2]

The first group of speakers at the CAST symposium concentrated on external Qi. After Chinese investigators and the earlier CSICOP delegation had exposed several prominent Qigong masters as charlatans (Alcock et al. 1988), the government was persuaded to crack down on their ilk (some have gone underground, but many still continue to enjoy protection provided by high-level state officials). We did not determine the extent of the crackdown, but we learned that many Qigong masters are still active, especially in the countryside. We were also told that we would not be able to observe any masters or "special ability" children because they would no longer cooperate. This was disappointing but it is a tribute to our hosts' debunking efforts that local performers are now too wary of being caught, as they were when exposed by James Alcock, James "the Amazing" Randi, and the other members of the first CSICOP delegation.

Mr. Lin Zixin, the retired editor of China's *Science and Technology Daily* and a CSICOP Fellow, was one of our principal hosts. At the symposium, which he helped organize, he discussed the extent of belief in pseudoscience in China. He credited the 1988 CSICOP delegation with helping to tarnish the reputation of the Qigong "superman," Xiao, but admitted much remains to be done. He compared widely held superstitions about the power of external Qi in China to the beliefs that inspired the Japanese sect, "Aum Shinri Kyo" (the cult that attacked the Tokyo subway with nerve gas). Mr. Lin, one of China's top scientific journalists and policy experts, described the extent of superstition in China as shameful and a threat to the nation's technological development. Scientific literacy is more important than ever as China tackles the arduous task of modernizing its economy, he said, but superstition continues to impede progress. Mr. Lin firmly reiterated his organization's support for CSICOP's efforts to combat pseudoscience worldwide.

Professor Qui Renzong of the Chinese Academy of Social Sciences compared the development of American and Chinese pseudoscience. He drew parallels between the concept of external Qi and the mysterious nonmaterial forces posited by parapsychologists, such as psychokinesis and extrasensory perception. Professor Qui echoed Mr. Lin's assertion that the Qigong movement has had a negative influence on Chinese society. Professor Qui lamented the fact that it has also been psychologically damaging for some devotees, and that even some scientists have been duped into believing in the power of external Qi—for example, an ardent promoter is Professor Qian Xuesen, China's foremost rocket scientist and a former professor at the California Institute of Technology. Professor Qui concluded with the memorable phrases: "It's only your private experience, if it is not repeatable," and "pseudoscience is an infinite regression of excesses."

Professor Wang Guozheng of the China Society for Dialectics of Nature continued the theme that pseudoscience is becoming a major social problem. He described his investigation of "seeing with ears," a trick similar to the "blind reading" exposed by Martin Gardner in his famous article on the "peek-down-the-side-of-the-nose" ruse.[3] Professor Wang ended this inquiry when he concluded that it was a worthless fad that would disappear on its own. Apparently it did not, despite its affront to official Marxist dialectical materialism. In ten years, not one claim had been substantiated, yet popular belief continued to grow. Such concerns led Professor Wang to found the Society for the Protection of the Scientific Spirit. Its aim is to promote scientific attitudes and combat the growing influence of pseudoscience. The society has encountered opposition from paranormalists, such as when a Qigong advocate who was rejected as a speaker at one of its meetings disrupted the proceedings by trying to force his way onto the program physically. It seems Chinese skeptics are vulnerable to many of the same tactics as those endured by their Western counterparts.

Dr. Zhang Tongling, professor of psychiatry at Beijing Medical University, presented her research on negative effects of Qigong practices. She believes that there is no such thing as Qi, but she found that some vulnerable people, drawn into the Qi subculture, have been harmed psychologically by obsessional involvement with these breathing, meditative, and movement exercises. Dr. Zhang now runs a clinic for former Qigong extremists. Her study of 145 cases from ten provinces found that these casualties were relatively well educated—about half were high school graduates or above. Forty-four were classed as workers, thirty-nine were government employees, thirty were students, and thirty-one were engaged in scientific research. The group was found to be highly suggestible and their symptoms were related to various alleged effects of Qi contained in books they had read. Dr. Zhang described their responses as a form of mental illness, probably the result of latent psychiatric problems that were exacerbated by fanatical immersion in Qigong exercises. Many of these problems looked like those we would call hysterical or psychosomatic symptoms (Shorter 1992). For example, they reported feeling Qi surging through various parts of their bodies, and some would experience overwhelming lassitude that they attributed to Qi suddenly draining from their bodies. In other cases, experiences were provoked that were psychotic, including visual and auditory hallucinations, delirium, and feelings of being possessed by animal spirits. Some exhibited symptoms we would classify as paranoid, such as the conviction they were being harmed by the master's power or that Qi had imbued them with extraordinary skills and a mission to cure diseases or save humanity. Some patients felt elated, perhaps manic, after their prolonged exertion, while others were left uncomfortably anxious, depressed, and suicidal. The severity was the worst in those who spent many hours per day immersed in Qigong exercises and in those with a long history of preoccupation with religious or superstitious pursuits. Dr. Zhang's portrayals were reminiscent of people we had encountered who were obsessed with alien-abduction fantasies or had become fanatically immersed in Transcendental Meditation, Scientology, or irrational health schemes, leading at times to behavior that bordered on the delusional.

At Shanghai International Airport. Andrew Skolnick with two of the delegation's hosts. L. to r.: Chen Hai Qiang, Andrew Skolnick, Xiao Wan Quan.

Professor Guo Zhengyi, deputy director of CAST, has visited the United States where he studied organizations dedicated to spreading pseudoscience. In his talk, he compared them to similar movements in China. He described a Mafialike network in China that has spread its influence by promoting (allegedly real) magical powers and fortune-telling in conjunction with acrobatic shows. These shady figures bill themselves as the future of science but, like pseudoscientists everywhere, they mangle all valid scientific principles. Their lucrative scams include Qigong demonstrations composed of fake acts of clairvoyance, superhuman physical strength, and "possession by animals." Professor Guo likened the practices of these roaming hucksters to practices that were common in feudalistic times, a theme that was taken up by his colleague, Dr. Yuan Zhong. Dr. Yuan emphasized that official materialist doctrines have merely suppressed, not eliminated, the strong desire of the masses to believe in ancient spiritual entities and magical powers. The pseudoscientific patina of Qigong has allowed these old religious beliefs to reemerge in a way that is less likely to arouse official ire. Dr. Yuan referred to Qigong as a pseudoreligion, one that is growing as the regime relaxes its demands for strict ideological conformity. Occasionally, the chicanery of some of these impostors reaches proportions that spur the government to intervene. The official responses were not spelled out, but we discovered in private conversation that these tricksters are usually warned and fined.

Professor Zu Shuxian of Anhui Medical University was one

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of the most trenchant critics of Qi as a medical concept. Having done postgraduate training in epidemiology at the University of Virginia, he was well qualified to discuss why problems of medical quackery are worse in developing countries. Particularly in rural areas, folk-healing traditions and modest education make it difficult for people to distinguish between legitimate and bogus doctors. In addition, developing countries have as yet little in the way of consumer movements that could help protect citizens from quacks. Dr. Zu denounced the press for promoting quackery and for its apparent inability to distinguish between scientifically valid and sham treatments. He lamented the tendency to credit patient satisfaction instead of rigorous testing as the measure of therapeutic success. Fraudulent medical institutions are now competing with legitimate ones for money, while government funding for university research is diminishing. Once again, China's problems parallel our own.

Also familiar to us was an interruption by a student at this session. He complained that scientifically trained Chinese physicians do not spend enough time with patients and do not offer enough emotional support, and that this feeds the popularity of quacks.

Beyerstein, Sampson, and Skolnick delivered papers dealing with various aspects of fraud and pseudoscience in health care and the proper methodology for testing putative treatments.

The CAST conference made it apparent, as Michael Fumento has titled his recent book, that science is under siege—not just in North America and Europe, but in China, as well.[4] There, as here, superstition, quackery, and pseudoscience have infiltrated academia, and some prominent scientists and philosophers are among the leading apologists. Their appeal to ancient magical ways of thinking, cloaked in pseudoscientific language, sounded depressingly familiar to us. In China, pseudoscience is becoming increasingly competitive with science for public support and government funding. The extent to which Chinese criminal elements have used superstition and pseudoscience to bilk the gullible public was news to us, however. Chinese academics are becoming more aware of possible psychological harms resulting from involvement with pseudoscience and quack sects and cults. In 1994, awareness of these growing problems led the Chinese government to issue a proclamation decrying the rise of superstition and pseudoscience and the erosion of science education (Sagan 1996). It seems that for many Chinese, the concept of Qi supplies an all-encompassing vision of life and its role within the cosmos as a whole. Qi has become a comfortable explanation for everything. Unfortunately, something that purports to explain everything explains nothing.

Meeting with the President of the Shanghai University of Traditional Chinese Medicine. L. to r.: Tai Zischer (one of the delegation's hosts), unidentified TCM physician, Andrew Skolnick, Xiao Wan Quan (delegation host), President Wang Ling Tai, Wallace Sampson.

On to Shanghai

After a day spent trekking the Great Wall, our tour of China then moved on to Shanghai. There we were hosted by friends of CAST officials who were academics, but not themselves associated with scientific institutions. They were able, however, to introduce us to a variety of practitioners of TCM. Before exploring local TCM facilities, we were given a chance to interact with conventional biomedical scientists during a most interesting tour of the brain research laboratories at Shanghai Medical University. The research problems, techniques, and apparatus we encountered at this well-equipped institute were familiar to us; and the work we discussed with these Chinese neuroscientists revealed that they are working at the forefront of their fields. After this tour, our focus shifted back to TCM.

We next visited the Shanghai University of Traditional Chinese Medicine and its affiliated Shu Guang Hospital—the largest TCM complex in China. The views expressed there were somewhat different from those we had encountered at the Beijing TCM Institute (Beyerstein and Sampson 1996), especially with regard to integration of scientific and traditional medicine. At the Shanghai institute, where the primary mission was the teaching of TCM, the president, Dr. Wang Ling Tai, was also a gastroenterologist who practices scientific biomedicine. As in Beijing, we were told that TCM was requested by less than twenty percent of the patient population. (It seems that self-medication with herbs is more pervasive in the country as a whole, however. The fifteen-to-twenty-percent figure refers to those patients who choose to see a TCM doctor.) After a long and enjoyable meeting with Dr. Wang, we were shown through the complex, which appeared similar in setup to the clinic complex in Beijing. We were shown a major manufacturing facility for antibiotics that we were told were derived originally from traditional herbal medicines. This aspect of TCM made sense to us because we knew that penicillin, for example, was derived from molds that had long been used in European folk remedies (there are frequent historical references to use of moldy bread for dressing dirty wounds).

While in Shanghai, we also toured the largest herbal pharmacy in China. TCM diagnosticians occupied booths around the periphery of each floor in this multistory building, while herbalists busily moved about the center, filling prescriptions according to the diagnosticians' recipes. With rapid, animated movements, they grabbed handfuls of dried vegetable and animal matter from rows of drawers stacked in massive cabinets that resembled floor-to-ceiling library card files. The ingredients were dropped somewhat unceremoniously on hand-held balances and then mixed on large sheets of paper. These were

then folded into dispensing packets and sold to waiting patients, mostly for preparation as herbal teas. The measurements struck us as rather imprecise by Western pharmaceutical standards, but greater accuracy might have been illusory because a perennial problem with herbal remedies is that the concentrations of active ingredients in the raw materials can vary greatly from source to source (due to climate, soil conditions, etc.). Also on sale were a variety of over-the-counter remedies that we also saw in department stores, corner pharmacies, tourist centers, and airports throughout China. Some of these, to our dismay, included preserved bear gall bladder, ground horns and penises of various wild animals, and other animal parts apparently sold primarily for their alleged ability to enhance sexual potency.[5]

We also saw North American ginseng prominently displayed in these stores—it is highly valued in China. Although many bold therapeutic claims are made for ginseng, its scientifically demonstrated effects are more modest. Its complex chemistry stimulates several bodily systems. Ginseng can act as a pick-me-up in a number of ways: it produces caffeinelike effects in the central nervous system, enhances carbohydrate metabolism and glycogen synthesis, and may stimulate the heart because it contains some digitalislike components (similar to those found in the common foxglove). It also has histiminic activity, and it contains steroids that can affect the hormonal system (Siegel 1979).[6]

The dispensing table at China's largest traditional herbal pharmacy, Shanghai.

At the Shanghai traditional pharmacy, we encountered for the first time TCM doctors who still use the ancient technique of pulse diagnosis (see Wallnöfer and von Rottauscher 1975). People are said to have fifteen different pulses detectable by traditionally trained healers although these have never been demonstrated scientifically. For us, the doctor placed his fingers on the pulse, stared vacantly into the distance for about a minute, as if absorbing its meaning, and then told us our diagnoses (none of which was accurate). He then wrote a TCM prescription for an off-the-shelf concoction that we filled at the counter. We were also diagnosed by a woman who held our hands and placed a small electrical probe at various points on our palms. From our muscle spasms, grimaces, and verbal descriptions of the tingling sensations, she arrived at a diagnosis, again one that would be news to our family physicians back home.

A Meeting with Professors of TCM

Our main conference in Shanghai was with about a dozen prominent TCM physicians affiliated with Shu Guang Hospital. Here, the flavor was quite different from the CAST symposium in Beijing, skepticism being much less pronounced. The Chinese doctors, most of whom had scientific medical training in addition to their traditional specialties, each gave brief introductory statements. The session was then opened for discussion and questions. We can best describe the event with a sample of our questions and the answers given. We asked our questions as naive Westerners, but with a perspective of scientific inquiry. The answers, as will be evident, highlighted the differences between the scientific outlook and that of TCM. The answers are not verbatim in every case because some were conveyed through a translator.

Q: How are the roles of Western-trained and TCM physicians different?

A: One example is a woman with cancer who failed with Western treatments and was then treated with TCM and lived four years longer than expected. [This exemplifies one of our major conclusions, namely that TCM still relies predominantly on anecdotal evidence—its practitioners exhibited very little understanding of the need for controlled clinical trials. Most of the group seemed to lack knowledge about how to do scientifically valid evaluations of their techniques.]

Q: Do you treat different cancers differently, or do you use the same treatment for all?

A: Every case is different, and treatment is different. [Ironically, TCM sees all disease as resulting from the same cause (Qi imbalance), but it sees each patient's case as unique. This answer also illustrates TCM's preoccupation with surface manifestations rather than trying to reveal a more limited number of underlying pathological processes that might manifest themselves in a wider variety of symptoms.]

Q: How do the different cancer remedies work, and what are the biochemical mechanisms for combatting cancer cells?

A: We are trying different methods to prevent cancer, especially in high-risk breast cancer patients—17,000 professional women. [Perhaps something was lost in translation.] Many traditional medicines are static. TCM is developing. We are examining curative effects and theoretical basis. We regard the patient as oneness. Every patient is "a small world." A major reason for interest in natural developments is traditional Chinese herbs. People are panicking about environmental chemicals, effects now being reversed by TCM. There are breakthroughs. Look at TCM from the Chinese perspective. We say, "Water the ponies [peonies?] well." [For example, pay attention to internal stresses of the patient.] Rather than killing cancer cells, increase internal factors to bring one into balance. TCM doctors see a change in the patterns of things. TCM treats imbalance of the negative and positive sides of things. [In other words, it does not treat disease processes per se.] TCM works well in circulatory disorders—it corrects blood circulation. [This was typical of many answers we received in that it sidestepped the original question and substituted a rambling string of metaphors instead.]

Q: How about ephedra—herbs containing ephedrine—are

there two concepts of how it works—pharmacological and TCM?

A: We have adopted several new ways of treating, and that is one [a probable translation problem, so we tried again].

Q: What is the rationale for the treatment with ephedra?

A: We have a division here—TCM and Western ways. Doctor recommends the method—surgery, medicine, or TCM—and the patient decides. Most doctors would use Western medicine first for acute problems, then TCM if needed. Such as with gallstones: operation first, maybe we would use TCM afterward. Same with cancer. Doctors agree on how to combine them. [It was apparent we were not going to obtain a direct answer, and so we moved on. The gist of the remainder of this part of the discussion was that TCM is seen as a way of strengthening the body to resist disease in general, not a means of combatting specific diseases.]

Q: [To a nephrologist (kidney specialist) who also uses TCM.] How does TCM treat a new disease or change as new concepts of disease arise? Does TCM change?

A: We combine TCM and Western medicine in treatment of kidney disease, but we have different ways in different phases of the illness. At first, we use TCM to prevent progression. In later stages, we also adopt Western ways. We also use TCM in transplants. [Again, we did not pursue this indirect answer.]

Andrew Skolnick having his pulses read by a traditional Chinese physician, Shanghai.

After the question-and-answer session, several TCM physicians tried to clarify earlier comments with the following statements:

Because of difficulties with cults, we have different definitions [for Qi, etc.]. TCM and Western medicine have sharp differences in their concepts.

Practice speaks the loudest. Results count most. Science is not absolute; it has its limitations, and is also developing. So, each has its own advantages. For example, Western [medical] science used to be [exclusively?] biological. Now it is biological and societal. Combining the biological, psychological, and societal occurred 1,500 years ago in China. Western medicine is developing in the same way. TCM was ahead of Western medicine.

TCM works and cures where Western medicine does not; Western medicine is more toxic,[7] so they are complementary and can learn from each other. We hope TCM and Western medicine can help and understand each other.

Western proponents say they know what works and now present a body of knowledge. Another way to look at it is that TCM considers the macro or whole body; Western medicine considers the micro. TCM does not apply to all cases; it is better for recuperative and chronic cases.

Patients understand this and know where to go. TCM has not only a philosophy, but a background. It is bidirectional. Both TCM and Western medicine concern homeostasis; TCM includes heart and spirit. From the lab perspective, TCM can improve senile dementia, especially Alzheimer's [disease]. Some biochemical levels return to baseline. We also see aging retarded in humans and animals, and there are other neurochemical and immune changes as well.

A notable exception to the generalities presented by most of the rest of this group of TCM physicians was a discussion we had with Dr. Yan De Xin. A scientist who studies the chemistry of traditional herbs, he expressed the belief, in private conversation, that many traditional medicines will be found to contain active ingredients of interest to scientific medicine (some of this has already happened—see, e.g., Lewis and Elvin-Lewis 1977). But, unlike most of the sentiments expressed during the Shanghai conference, Dr. Yan was only willing to grant that efficacy on the basis of scientific trials. He has been trying to extract possibly active ingredients from a number of traditional herbs and to subject them to proper double-blind tests. His understanding of what needs to be done was impressive but, like researchers everywhere these days, he has been hampered by funding shortages.

Our meeting with this group of TCM experts ended with a formal dinner, each of the numerous courses flavored by a different Chinese herb used by traditional Chinese physicians. It was explained to us that TCM makes little distinction between the health-giving properties of foods and medicines.

External Qigong

Although we saw no external Qi demonstrations in China, both of us have observed such exhibitions in the large immigrant Chinese communities in our home cities. One was at an American Medical Student Association meeting in San Francisco, April 8, 1995. It was performed by Effie Poy Yew Chow, R. N., for an audience of about one hundred students. She seemed to advocate a combination of Ju Jitsu, suggestion, and "applied kinesiology."[8] She also claimed (but could not demonstrate), as we heard in China, that Qigong masters can transport Qi energy several thousand miles to alter the molecular structure of water. The students seemed to enjoy the lecture and, surprisingly, none challenged Ms. Chow's rather extreme claims. Barry Beyerstein had an equally unfulfilling encounter with a famous Qigong master in Vancouver.[9] Previously, this author's brother, Dale Beyerstein, had investigated some prominent TCM practitioners in the Vancouver area and found them dangerously wanting in medical knowledge (D. F. Beyerstein 1990).[10]

Conclusion

Looking back at our discussions with TCM proponents in China, it often seemed that our questions and their answers came from two different worlds. It soon became apparent to us that this is equally true when the scientific and traditional medical communities in China try to communicate. This was obvious in the wide gap between the remarks of the academics and physicians gathered by CAST in Beijing, and the answers given by most of the TCM physicians we encountered in Beijing and Shanghai. The former spoke in terms we could understand, emphasizing the requirement to support claims with evidence and the need to understand such demonstrable effects TCM might produce in terms of scientifically verifiable biological mechanisms. Although the speakers at the CAST meeting in Beijing tended not to demean TCM during their presentations, several of them dismissed it in private conversations. The rest refrained from making rationalizations for TCM.

The statements of the TCM physicians, on the other hand, tended to be rambling, global, and tangential (this was not merely a language barrier, for many of them spoke excellent English). The traditionalists were difficult to pin down because when they had no available answer, the question would be redirected. While TCM physicians downplayed the importance of statistical approaches and placebo-controlled clinical trials, they did not hesitate to enlist such data when it seemed to their advantage. We came away with the strong feeling that the TCM community, with a few exceptions, does not really understand the power of the placebo effect nor the need for double-blind clinical trials. They seemed not to comprehend why we were not impressed by testimonials or anecdotes about individuals who had recovered after TCM treatments. Many claims seemed inflated, such as that for TCM's effectiveness in Alzheimer's disease and AIDS (see, e.g., Hou 1991). In the end, we were left with the same sense of frustration we often felt after arguing with advocates of "alternative medicine" at home. Both exhibit an essential vagueness when explaining the mechanisms presumed to underlie their treatments. Both are prone to assume that metaphors count as explanations and that anecdotal evidence can substitute for systematic verification of claims.

Andrew Skolnick being diagnosed by a TCM electrical palm stimulator.

Several speakers in both Beijing and Shanghai laced their discussions with political references, for example, to the evils of feudalistic times, the unwillingness to be subjected to logic (dialectics), and inhibitions to social progress. It seems that the practice of TCM and the concepts of internal and external Qi place China in a dilemma. Advancement of these ideas, especially overseas, increases China's prestige and is a matter of cultural pride. Yet the inherent mysticism and magical thinking in these notions are an embarrassment to the Marxist rationalism of the government and to the scientific community as a whole. Furthermore, the growing involvement of criminal elements in paranormal spheres, as occurs to some extent in all countries, is considered a growing threat to social order. Overall, we perceived a delicate balancing act, between toleration and encouragement of TCM on the one hand, and attempts to restrict its more extreme manifestations, such as external Qi quackery, on the other.

We ended our tour unconvinced that Traditional Chinese Medicine has objectively proven its claims to cure any specific diseases. Acupuncture has some mild analgesic [lowered sensitivity to pain while conscious] properties and Chinese herbs have already yielded to scientific analysis some useful drugs—undoubtedly more will follow. We could find no scientific support for the use of cupping, moxibustion, and acupuncture for infectious diseases, deafness, and congenital deformities. We acknowledge the emotional comfort Chinese patients suffering from chronic or fatal disorders receive from TCM ministrations, but we saw no evidence to back up the oft-heard assertion that TCM actually works where Western medicine has failed. Insofar as TCM offers a degree of comfort and hope for those in difficult situations, it seems to perform a similar role to those of vitamin supplements, chiropractic, homeopathy, naturopathy, and therapeutic touch, our homegrown Western pseudomedicines.[11]

Notes

1. "Qi" is the name Chinese philosophy gives to a scientifically undetectable "force" or "energy" believed to permeate everything in the universe. TCM asserts that imbalances in the flow of Qi in anatomically unverified "meridians" are responsible for disease, fatigue, etc. Acupuncture, Chinese herbs, massage, etc., supposedly restore well-being by rebalancing the flow of this mystical essence. Qigong is a set of mental and physical exercises akin to those of Tai Chi Chuan and Ai-ki-do that also promise spiritual and physical benefits by channeling this mysterious energy. With its mental disciplines and postural and breathing exercises, Qigong has long been practiced as a form of self-hypnosis that claims to promote relaxation and general health, much in the manner of certain yoga exercises. These days, practitioners of this aspect of the discipline call it "internal Qigong" to distinguish it from the much more dubious "external Qigong," which has enjoyed a dramatic rise in popularity in China and in the West. Devotees of external Qigong claim they can control the Qi force beyond their own bodies to debilitate their foes, achieve the sorts of allegedly psychic feats familiar to Westerners, and diagnose and cure physical ailments. Qigong masters have become rich and powerful in China, filling massive sports arenas for their demonstrations of magic and faith healing. Chinese skeptics who have exposed these Qigong hoaxers were among the hosts of the delegation that included these authors (Lin et al., in press).

2. As an example of why scientific physicians consider external Qigong to be quackery, take the following advertisement for a "Qigong Herbal Pillow" that appeared in the September 1994 issue of the English-language magazine, *China Today*, published in Beijing by the China Welfare Institute. The pillow, which sells for U.S. $198, is claimed to be effective for high and low blood pressure as well as for "insomnia, diseases of the heart, brain, and blood ves-

sels." It also allegedly "reinforces the kidneys," relieves rheumatism, "builds up the spleen," "stops pain," aids digestion, and "energizes the mind." According to the manufacturers, it is a "small-radar Qigong bionic device" that "works by utilizing the synchronicity of global and human magnetic fields and of trace elements, and through the magnetization of Chinese herbal medicines." Invented by the Qigong master Wang Shibo, it incorporates a "high-energy Qigong tube" that is supposed to generate its own power from the user's speech, breathing, and heartbeat. This causes it to vibrate in therapeutic ways; and its radiant power can help users "develop their special bodily abilities" (a common euphemism for psychic powers). The pillow is sanctioned by the Bai Zi Yuan Shen Qigong Research Institute and, according to the ad, it is effective for three years.

3. Gardner, M. 1981. Dermo-optical perception: A peek down the nose. *Science: Good, Bad, and Bogus.* Amherst, N.Y.: Prometheus Books, 63-73. (Originally published in *Science,* February 11, 1966.)

4. Fumento, M. 1993. *Science Under Siege: Balancing Technology and the Environment.* N.Y.: William Morrow.

5. While we are quite prepared to accept that certain herbal remedies contain biologically active ingredients that could be useful in medical practice (some have already met this criterion of scientific proof—see Lewis and Elvin-Lewis 1977), we see no such value in those concoctions made from organs of endangered species. Their rationale, as we point out in Part 1 of this report, is purely that of "sympathetic magic," the basis of all superstitious practices (see Note 6).

6. A good example of the "sympathetic magic" aspects of TCM (the belief that "like begets like") is that the price paid for ginseng root is not determined by the concentration of its active chemical ingredients. Rather, it is determined by the degree to which the variegated root structure resembles a human body. Roots with a greater number of distinct parts that can be seen as a head, torso, appendages, etc., fetch a higher price.

7. Wherever we went, TCM doctors tended to emphasize the toxic side effects of Western drugs while glossing over the well-known fact that herbal medications have potential toxicities of their own (Tyler 1985). Many "natural" plant substances are virulent poisons; others can have serious side effects for the digestive, cardiac, pulmonary, hepatic, renal, and nervous systems. A major drawback among traditional herbalists of all ethnic stripes is their insufficient education concerning these potential harms.

8. "Applied kinesiology" is a scientifically discredited technique for reading the "muscle weakness" that allegedly follows (instantaneously) exposure to certain presumed pathogens (refined sugar, food dyes, preservatives, and fluorescent lighting are favorite culprits). This pseudoscience should not be confused with the authentic discipline of kinesiology, which is the scientific study of the control of bodily movement.

9. A recent meeting of the B.C. Skeptics in Vancouver, B.C., Mr. Ge Yingcai, a famous Qigong master and healer who had immigrated to Canada. Mr. Ge had promised to demonstrate, under double-blind conditions, his ability to make distilled water taste sweet by irradiating it with his Qi energy. The audience was disappointed and annoyed, however, when, after a rambling two-hour lecture, the master announced that he was now too tired to participate in the controlled test. Mr. Ge said he had a degree in nuclear physics from Beijing University, but his interactions with several professors of physics in the audience revealed significant gaps in his understanding of basic science. Likewise, in discussion with Dr. Kirsten Emmott, a physician member of the B.C. Skeptics, Mr. Ge exhibited deficiencies in elementary medical knowledge. For instance, he had no comeback when Dr. Emmott pointed out that his claim to diagnose disease in his clients' organs by feeling pain in the corresponding ones in his own body was doubtful because the organs he referred to have no nerve supply that could signal such sensations (even if his organs could somehow magically resonate with those of his clients). Although Mr. Ge had specifically agreed to produce scientific studies to substantiate his conceptions of disease and his claimed cures, all he could deliver were the usual testimonials from satisfied customers.

The B.C. Skeptics were similarly frustrated when they issued a challenge to be scientifically tested to the Qigong master Yan Xin during his North American tour in 1990. Yan's associate, Wu Xutian, wrote saying that the skeptics only remained dubious because they had never seen a *real* Qigong master in action, but he declined to show them what his supposedly real colleague could do. In his letter of rejection addressed to Dale Beyerstein, Wu condescendingly dismissed the skeptics' challenge: ". . . Dr. Yan Xin and I are not interested in the very low level test which was very popular in China ten or fifteen years ago. He is busy on some cooperating research subjects with several important organizations in U.S." Wu suggested the skeptics should be content with some "scientific" papers by Yan which he enclosed. As usual, the claimed effects of Qigong were extremely unlikely by conventional scientific standards but were not published in peer-reviewed journals of any international scientific standing.

10. Dale Beyerstein, who suffers from diabetes, dropped several obvious hints in describing his complaint for each TCM doctor he visited (he listed the textbook symptoms but did not mention the word "diabetes"). He even prominently displayed his "Medic Alert" bracelet while having his pulses read, but none of the TCM doctors picked up on his diabetes (none even asked what the clearly marked bracelet was for!). The herbal remedies that were prescribed for Dale differed at the different offices and some of them would have been medically dangerous for a diabetic to take.

11. Many scientifically trained physicians accept that chiropractic manipulations could be beneficial for certain purely musculoskeletal complaints. However, medical scientists remain dubious about the underlying rationale for chiropractic still espoused by most of its practitioners. These theoretical "explanations" continue to fly in the face of scientific knowledge in the fields of anatomy and physiology (Jarvis 1987). Chiropractors who still insist that *all* diseases stem from spinal misalignments ("subluxations"), and can therefore be cured by joint manipulation, remain open to charges of pseudoscience. The same is true of the many chiropractors who continue to reject the germ theory of disease, oppose basic immunization, and use scientifically discredited diagnostic devices.

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Conspiracy Theories and Paranoia: Notes from a Mind-Control Conference

Some therapists' lack of skepticism may make them prime targets for racist propaganda.

EVAN HARRINGTON

The debate over "recovered" and "false" memories continues to be one of the most contentious issues in the field of psychology today. The debate is extremely polarized with very little amicable communication among members of the opposing camps. While such a dispute may eventually be beneficial to science, in that both sides are clearly being spurred on to produce original research at a frenetic pace, at the moment the clearest manifestation of this dichotomy is miscommunication and friction between factions. Such miscommunication has been exacerbated by a tendency of some theorists on both sides to make sweeping generalizations and use vague terminology. An example of such miscommunication is the use of the

term *recovered memory therapy*, used frequently in books such as *Making Monsters* by Richard Ofshe and Ethan Watters (1994). The term as they used it is not without its critics (e.g., Dalenberg 1995) who complain that the term is overgeneralized. Conversely, in a televised debate, Charles Whitfield, a trauma therapist, stated that there is no such thing as recovered memory therapy. The true state of affairs likely rests somewhere in between.

While some misunderstandings may be rooted in semantics, others are more difficult to trace and harder still to describe adequately. It is very difficult to get quantitative data in the area of the beliefs held by therapists regarding topics that *may* manifest in the form of false memories in their patients. And although some surveys have attempted to obtain quantitative measures of therapists' beliefs, practices, and experiences regarding traumatic memory recovery and therapy (e.g., Poole, et. al. 1995), such surveys fail to fully inform the reader of the quality of those beliefs. In an attempt to obtain a qualitative analysis of the beliefs of therapists with regard to recovered memories of traumatic events, I have frequently attended sexual- and ritual-abuse conferences. Some of these conferences have afforded me valuable insight into the dynamics of a scientifically informed trauma therapy. At other times I have gained valuable insight into the beliefs of some "fringe" therapists who believe in vast and nefarious conspiracies organized to harm children. My purpose here is not to argue whether such beliefs are accurate or not; rather, I simply wish to outline what some of those beliefs are. The following is not meant to be representative of all therapists in this field. I offer only a description of what *some* therapists believe. The reader will please keep in mind that any qualitative description, such as this one, may not be used to infer anything about the population as a whole, but it may be illuminating in that there is a certain subpopulation that clearly is represented.

"According to Bowart, the CIA is currently conducting a campaign of mind control against the American public and wants to discredit victims of these experiments so that their stories will be seen as false memories."

This article describes my experiences at a conference held in Dallas, Texas, March 23-26, 1995, by a group calling itself the "Society for the Investigation, Treatment and Prevention of Ritual and Cult Abuse" (SITPRCA). SITPRCA may be reached at P.O. Box 835564, Richardson, Texas 75083-5564.

The 1995 SITPRCA conference was titled "Cult and Ritual Abuse, Mind Control, and Dissociation: A Multidisciplinary Dialogue." The word *dialogue* is misleading because there were no skeptics or critics among the speakers and, as will be demonstrated, any dissension from the audience was strongly discouraged—it was essentially a monologue. The 1995 conference offered continuing education credit available through the Texas State Board of Examiners of Licensed Professional Counselors.

The conference was attended by 150 to 200 people. A significant minority of the audience consisted of patients who claimed to have had recovered memories of ritual abuse (several of whom I spoke with) and who were allowed access to even the most advanced professional training sessions, sometimes at the recommendations of their therapists.

The SITPRCA organization was created by Dallas therapist James Randall "Randy" Noblitt, currently the president of the group, and Pamela Perskin, its executive director. Noblitt lectures widely on the existence of ritual cults and mind-control techniques, and has served as an expert witness in a number of child-abuse cases. In the 1992 Austin, Texas, day care case of Fran and Dan Keller, he helped obtain a conviction by informing the jury that cults across America regularly ritually abuse children through torture and sexual abuse and that the cults make child pornography with these victims. Noblitt stated that these children will often not be able to recall the events because they are so highly traumatized, and that the severity of the abuse causes the amnesia. This testimony, combined with Noblitt's statement that he was "convinced" that the child in this case had experienced extreme trauma, apparently helped convince the jury that the Kellers operated a ritual-abuse cult in their day care center. At the time of that trial, Noblitt testified that in addition to supervising his own clinical employees he had been sought to consult in 15 similar cases and that he provides supervision for therapists individually and in groups. Noblitt and Perskin (1995) recently released a book outlining their beliefs about ritual abuse. While some mainstream therapists may conclude that those associated with SITPRCA represent a fringe element, I would point out that such organizations are able to have a dramatic influence on society.

Opening Remarks

The conference opened with a panel consisting of Walter Bowart (author of *Operation Mind Control*, Dell, 1978), Mark Phillips (who claimed to have inside information on government mind-control techniques), and Alan Scheflin. Scheflin is a lawyer who has for years documented the Central Intelligence Agency experiments with "brainwashing" in the 1950s and 1960s and who spoke on a panel at the 1993 American Psychological Association (APA) meeting with memory researcher Elizabeth Loftus and again at the 1995 annual meeting along with Richard Kluft and several others. Bowart opened the conference with a direct appeal to the therapists. Bowart claimed that "the False Memory *Spindrome* [*sic*] Foundation . . . is a Central Intelligence Agency action. It is an action aimed at the psychological and psychiatric mental health community to discredit you, to keep you in fear and terror." Bowart stated that everyone connected with the False Memory Syndrome Foundation (FMSF) will be shown to be

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"spooks or dupes." According to Bowart, the CIA is currently conducting a campaign of mind control against the American public and wants to discredit victims of these experiments so that their stories will be seen as false memories. Phillips spoke for a while about how he would reveal the trade secrets of mind control.

Scheflin gave a lengthy talk about how therapists can protect themselves against the lawsuits brought by former patients who retract memories of childhood abuse. These lectures were warmly received, especially Scheflin's. Perhaps because several speakers at the conference had been successfully sued by former clients, the therapists in attendance seemed quite fearful that their clients would retract their memories of abuse and sue them for instilling false memories. I felt that the opening remarks were overtly political for what was purported to be a scientific gathering.

Racist Conspiracy Theories and the Militias

Doc Marqui, a self-described former "school teacher and witch," lectured about the satanic "Illuminati" conspiracy, which he alleged President Bill Clinton was part of, serving as the "anti-Christ." Marqui assured the audience that this theory is not racist; but the fact is the Illuminati theory is the same one advocated by most members of the American militia movement, and it was utilized by the Nazis in their effort to justify their campaign of genocide against the Jews of Europe (Cohn 1966). *The Protocols of the Elders of Zion* is an anti-Semitic document (based on the Illuminati conspiracy theory) that purports to document plans for Jewish world domination and which first appeared in Russia in 1903 in a newspaper edited by a "noted and militant anti-Semite" (Cohn 1966, p. 65). The book was instituted as mandatory reading in German schools by the Nazis in 1933 (Cohn 1966). Marqui touted the overall validity of the *Protocols* while replacing the word *Jews* with the word *satanists*. The Illuminati conspiracy holds, in part, that large Jewish banking families have been orchestrating various political revolutions and machinations throughout Europe and America since the late eighteenth century, with the ultimate aim of bringing about a satanic New World Order. Members of the militia movement have said they believe that the United Nations has been infiltrated by these "demonic forces" and is poised for a violent overthrow of the American government, after which American rights to own firearms will be removed and American citizens will be enslaved by the introduction of a cashless society, as foretold in the Bible's book of *Revelation* (see, e.g., Constantine 1995; Kelly 1995; Springmeier 1995; Stern 1996). Marqui stated that the Illuminati is essentially a shadow government that has controlled the United States since its inception, controls the Masonic order, and commits all manner of occult crime culminating in human sacrifices on eight days of each year. Much of this paranoia was chronicled more than 30 years ago by Richard Hofstadter (1965).

While the Illuminati conspiracy theory is widely endorsed by militia members, it is also embraced by reactionary groups such as: the Lyndon LaRouche organization (political analyst Chip Berlet [1994] stated that in the early 1970s, Lyndon LaRouche "took his followers . . . and guided them into fascist politics"); the John Birch Society (which Berlet [1994] said believes "Insiders" have for years controlled the U.S. and former Soviet Union governments); and the Liberty Lobby. The Liberty Lobby, with its newspaper *Spotlight*, was created by Willis Carto, who also founded the Institute for Historical Review, which asserts that the Holocaust was a hoax (Berlet 1994).

Author Linda Blood, who spoke later in the day, protested that she was "unhappy to be following someone [Marqui] who is pushing the *Protocols of the Elders of Zion*," which she said was anti-Semitic trash. Blood's protest deeply angered some and bewildered others, while about four of Blood's friends clapped in support. Perskin, who moderated the session, announced that although she is Jewish she found nothing offensive in Marqui's lecture. Marqui appeared to me to be connecting existing racist conspiracy theories with the therapists' theories about satanic cults.

Marqui was followed by former Federal Bureau of Investigation agent Ted Gunderson, who highly praised Marqui's lecture. Gunderson is well known for his claims that an archaeological dig under the McMartin preschool showed evidence of tunnels, through which the children were allegedly spirited to other buildings to be prostituted in the community (Summit 1994). The results of this dig have for years gone unpublished while calls for funds to self-publish the results have been issued in newsletters such as the *Survivor Activist* (1994). Meanwhile, the integrity of the dig has been strongly disputed (Earl 1995). Gunderson presented what he called "new evidence" in the 1984 McMartin preschool sex-abuse case in Manhattan Beach, California. He produced a number of photographs of the foundation of a house in the hills above San Bernadino, California, that had burned down, he claimed, the night the charges were filed in the McMartin case. He alleged that the McMartin children were flown to this house and ritually abused, and that the house was torched to destroy evidence. The sum total of the evidence he presented to support this allegation was the existence of spray-painted satanic graffiti on the foundation stones and on boulders on the property. Apparently, several years had gone by between the time of the alleged fire and the time Gunderson snapped the photos. Yet Gunderson was dismissive of the idea that the house foundation on the lot, with its hillside vista of San Bernadino, had

"Gunderson and Marqui seem to me to be attempting to introduce therapists to racist conspiracy theories and reactionary propaganda, while at the same time groups such as the LaRouche organization endorse satanic conspiracy theories to draw in new members."

been used by teenagers who might have painted the graffiti after the fire. The therapists were enraptured and later asked if Gunderson was planning to publish his photos or if there was any chance of using this evidence in a new trial. The McMartin preschool case resulted in the longest criminal proceeding in American history and failed to produce any convictions (see e.g., Nathan and Snedecker 1995).

Gunderson then described a conversation he had with a witness, Paul Bonacci, from an alleged satanic-ritual abuse case in Nebraska that was detailed by former Nebraska state Sen. John DeCamp (1992), who was also a speaker at this conference. The grand jury of Lincoln described this case as an attack by DeCamp "for personal political gain and possible revenge" (Dorr 1991, p. 1), a "smear campaign," and a "carefully crafted hoax" (United Press International, September 18, 1990). The grand jury jailed one and indicted two others (including Bonacci) for perjury, and was so critical of DeCamp that he sued the grand jury for ridicule, though he quickly lost (Dorr 1991). A church in the area, the Nebraska Leadership Conference, responded by publishing a tract (no date) named *The Mystery of the Carefully Crafted Hoax,* with a foreword by Gunderson, in which he continued the allegations of satanic-ritual crime. At the conference Gunderson related Bonacci's description of a slave auction in Las Vegas in which 25 to 30 vans pulled up, airplanes landed, and foreign men with turbans bought children and took them away. According to Gunderson: "Nobody knows what happened to those kids. They use them for several things: body parts, they use them for sacrificing, for sex slaves. But this is a big market. Does anybody have any idea what a blue-eyed, blond-haired eleven- or twelve-year girl would sell for? Fifty thousand dollars."

Gunderson claimed that there are currently 500 satanic cults in New York City alone, each averaging eight sacrificial murders a year, for a total of 4,000 human sacrifices *every year.* Gunderson did not explain how the cults remove bodies in the asphalt jungle of New York.

Gunderson believes in the threat posed by the New World Order, as do Marqui and militia members. Gunderson has appeared on *Dateline NBC,* at militia conferences (Witt 1995), on Michigan Militia member Mark Koernke's shortwave radio program, and on the cover of *Spotlight* (May 13, 1995), stating that the U.S. government intentionally bombed the Oklahoma City federal building in April 1995, in order to remove our rights through anti-terrorism bills. Gunderson informed the audience that *Spotlight* "tells it like it is," and urged audience members to call the subscription number, which he read aloud. On top of this, Gunderson gave an interview to Lyndon LaRouche's *Executive Intelligence Review* (May 25, 1990), in which he described FBI special agent Ken Lanning as "probably the most effective and foremost speaker

for the satanic movement in this country, today or at any time in the past." Gunderson and Marqui seem to me to be attempting to introduce therapists to racist conspiracy theories and reactionary propaganda, while at the same time groups such as the LaRouche organization endorse satanic conspiracy theories to draw in new members.

Political analyst Chip Berlet's argument that radical right elements are seducing the left should be taken seriously. In his monograph *Right Woos Left* (Berlet 1994), he describes, among other examples, how the LaRouche organization has persistently destabilized legitimate leftist activist organizations by infiltrating these groups and then claiming that these groups endorse LaRouche. The LaRouchians also gain credibility through their association with legitimate political activists, which enables them to draw new converts. The cult-ritual abuse field is a prime example of such infiltration. Many therapists who specialize in treating ritual or other forms of abuse identify to some degree with feminism and other liberal ideals. When radical right conspiracists get such liberals to believe in the New World Order or "Operation Monarch" (a similar movement, described later) they gain a boost in credibility far beyond what they could expect by printing their stories in *Spotlight* or the *Executive Intelligence Review.*

Former Nebraska state Sen. John DeCamp, mentioned earlier, has been on the ritual-abuse circuit for some time now, talking about his 1992 book *The Franklin Cover-Up,* which purports to document a satanic organization in Nebraska that abused children and prostituted them within the White House. DeCamp gives a favorable mention to a fact-finding mission sponsored by LaRouche (DeCamp 1992, p. 241). The editors of the *Executive Intelligence Review* repeat DeCamp's claims and praise his book as "important" in their virulently anti-Semitic party tract titled *The Ugly Truth About the ADL* (Anti-Defamation League) (Editors of the *Executive Ingelligence Review* 1992). The July 27, 1990, issue of the *Executive Intelligence Review* stated that the FBI in Nebraska covered up child abuse and murder.

On June 15, 1995, DeCamp appeared before a U.S. Senate subcommittee hearing on domestic terrorism chaired by Arlen Spector. DeCamp appeared as a lawyer representing the American militia movement and the four militia leaders testifying that day. At a Washington, D.C., news conference, DeCamp glowingly described the militia movement as "a political movement in the birthing . . . painful, joyous, confusing, and exciting" (Janofsky 1995, p. 10). DeCamp also has clear ties with the Nebraska Leadership Conference. A call to the church office confirmed that the Nebraska Leadership Conference had "contributed significantly" to DeCamp's book.

DeCamp delighted the therapists at this conference during a luncheon session in which he described the allegations put forth in his book.

Conspiracy Theories in Action

I struck up a conversation with a woman and her son and learned that the woman claimed to have recovered memories of being abused in a satanic cult. She drove across two states to attend the conference, she said, in the hope that she could learn about Nazi scientists being brought to the United States after World War II. She knew nothing about this topic but seemed to suspect that it had something to do with her. The conversation drifted to the topic of treatment for sex offenders while they are incarcerated. At this point we were joined by a man, whom I'll call Felix, and his companion, who said that treatment for sex offenders is unnecessary because when the New World Order takes control of the country, members are going to shoot all prisoners and also eliminate three-quarters of the world's population. Felix described to us how the New World Order operated, manufacturing multiple personality disorder through torture and creating sex slaves and drug mules under the mind control of the CIA (this is the basis for the alleged "Operation Monarch"). Felix also described how the black helicopters of the New World Order landed in his hometown of Portland, Oregon, and black-suited storm troopers illegally searched all the homes in the neighborhood. There was a total news blackout of this because, Felix said, the media are part of the conspiracy. Later, Felix confided to me that his companion was wrong: the New World Order would not kill all the prisoners, but would use them as slave labor. Felix said he did not like to disagree with her because she was a former "Monarch" mind-control slave.

Felix sold me his newsletter, as big as a book, in which he makes some very strange claims: Charles Manson was programmed by the Illuminati, the Anti-Defamation League is controlled by Jewish satanists, and Marilyn Monroe was a mind-control slave. According to Felix, virtually anyone who disagrees with Felix is a Monarch slave, including prominent militia leader Bo Gritz, who talked Randy Weaver into surrendering at the 1992 incident at Ruby Ridge, Idaho. Most disturbingly, Felix told me that he works as a counselor and has helped "a lot" of people suffering from multiple personality disorder. Felix apparently has no mental-health counseling credentials, and his name badge identified him as "clergy." Nevertheless, he said he counsels dissociative clients and guides them through the intricacies of international cabals.

By this time a crowd had gathered around Felix and me. After Felix's monologue, a social worker from North Carolina informed the group that in the day care sex-abuse case she was investigating, she *thought* she remembered the kids talking about black helicopters. She said she would look into it.

Secrets of Mind Control Revealed

Felix's claims paled in comparison to what came next. Mark Phillips claimed to be a former government agent involved in mind-control experiments. He was always vague, never giving any information that could be checked. His companion, Cathy O'Brian, claimed to have survived years of torture and abuse at the hands of her CIA handlers in Operation Monarch (these two seem to be the source of most of the Monarch material). O'Brian maintained she had been tortured in

unimaginable ways since the time she was a child, and that her cult handlers successfully created dissociative identity disorder in her, which was cured by Phillips, who also managed to hide her from the CIA. She was so savagely tortured, she said, that her back was a complete mass of scar tissue. Phillips added that he had once tried to count the scars but lost count somewhere in the hundreds. We never saw the scars, photos of the scars, or doctors' reports about the scars.

O'Brian stated that she was forced to have sex with a plethora of political figures including George Bush, Ronald Reagan, Jimmy Carter, and Gerald Ford (whom she said she knew as "the neighborhood porn king"). She also said she was abused by Hillary Clinton (but not by Bill). Politicians were not the only ones involved—O'Brian stated that a number of baseball figures were in this satanic/CIA mind-control plot. She told me personally that virtually the entire country music industry is set up by the New World Order to make money. According to O'Brian, most popular country singers are Monarch slaves who had alter-personalities created with good voices for singing. Phillips and O'Brian, along with Bowart and others, claimed that the CIA is currently abusing people through Operation Monarch. Phillips claimed 20 years of experience in genetics and said that the cults would breed slaves selectively to create musical geniuses. To test his vast experience with genetics, I asked him what he thought of the Human Genome Sequencing Project. He had never heard of it. It seems impossible for anyone with even a rudimentary knowledge of genetics to be unaware of the biggest project ever in that field. Nevertheless, one author claims that Phillips is "currently deprogramming at least six Monarch slaves" (Springmeier 1995, p. 243).

It seems that a number of people in the audience were accepting of Phillips's and O'Brian's claims, although Perskin (of SITPRCA) informed me that this duo will not be asked back in the future because they failed to produce evidence of Operation Monarch. In a personal conversation with me (July 12, 1995), Scheflin stated that he had been able to obtain internal CIA documents corroborating the existence of mind-control experiments in the 1950s and 1960s. (The documents demonstrate that the CIA conducted unethical experiments to try to create multiple personalities in people for the purpose of creating a super spy who could keep vital information submerged in an alter personality [Thomas 1990].) But, he said, the paper trail completely died out by 1976. According to Scheflin, there are no credible reports of mind-control experiments after 1976 and no credible reports of any nature on Operation Monarch.

Catherine Gould gave an advanced workshop in which she described the mechanics of cult mind-control, extensively utilizing the mind-as-computer model. At one point she puzzled over the idea of cult members catching AIDS. She said that no one can figure out why the offenders are not "dropping like flies, because we know they don't practice safe cult sex." With all the blood, cannibalism, and unprotected sex, they ought to be catching a lot of sexually transmitted diseases. Therapist Jerry Mungadze offered a unique explanation. He suggested that mind-control programming boosts the immune system, making the victim resistant to the HIV virus, and that is why children in day care satanic-ritual abuse cases do not have elevated levels of sexually transmitted diseases.

Well, if they've found a cure for AIDS, why do they bother making money with pornography? Such a cure must be worth several billion dollars! In the grand tradition of conspiracy theories, discrepant information is explained away or, as in this case, incorporated into the scheme. Amazingly, this solution to the AIDS conundrum appeared to be taken seriously by most in the room.

Alternate Views Not Welcome

Chrystine Oksana lectured on her experiences of recovering memories of ritual abuse and her subsequent search for corroboration (see Oksana 1994). Oksana stated that she had read some 500 books on the topic of trauma and child abuse. For this reason I asked what she thought of the recent study by Linda Meyer Williams (1994). Oksana said she had not heard of it. The report by Williams is a pivotal study that demonstrated that a substantial minority of adults failed to disclose their documented emergency room visits when they were children, which ostensibly occurred because they had been sexually abused. The study demonstrated that some people may forget such events. There is a mistake in the text of the paper that states the existence of a nonsignificant trend such that, as the amount of force used in the commission of the abuse increases, recall decreases. The trend in the data actually shows that as the amount of force used in the commission of the abuse increases recall *increases,* which is opposite from, and fails to support, the theory of repression of traumatic memory (Harrington 1995). My description of this data set visibly angered several in the audience. One woman voiced disbelief of what I had said (preferring to believe that greater trauma typically was related to nonrecall), while a second woman shouted at me twice to read Lenore Terr's *Unchained Memories.* After a couple more rebuffs, the session ended in a stony silence. Yet another woman approached me and bluntly stated that she did not believe what I had said. I told her that I had a signed letter from Williams affirming my observations. This woman shrugged her shoulders and walked away smiling, as if to say that she still did not believe me. This appears to be an example of the resistant nature of strong beliefs toward discrepant information.

In the final analysis of the Williams data, the nonsignificant trend of force being associated with greater recall is probably a confound wherein both greater force and greater recall are associated with older age at time of abuse. Nevertheless, mine was a legitimate question to raise during a session on traumatic memory where it was stated that events that are more traumatic are more likely to be dissociated from consciousness. The scalding reaction I received from the audience supports the view that group social representations are not amenable to contradiction (Guerin, in press), and indicates that these are not issues open for discussion.

Skepticism and Satanism

The next session featured lawyer John Kiker and therapists Noblitt, Michael Moore, and Jan Maclean on the topic of the travails of being sued. Moore described in detail how violated he felt by being sued by former patients. Maclean stated you can *always* believe the stories children tell of being abused—children might make up other things, but they never make up traumatic events. I asked the panel what they thought of Steve Ceci's work. There was a moment of dead silence. None of the four panelists had ever heard of Ceci, who is one of the top developmental psychologists in the country and is well known for his recent experiments demonstrating the suggestibility of children. Ceci's "mousetrap" experiments (Ceci 1993; Ceci and Bruck 1995) demonstrated that repeated interviews regarding a false traumatic event (getting a finger caught in a mousetrap and being taken to the hospital) can result in a portion of children saying (and apparently believing) that the fictional traumatic event occurred. After I described this experiment, the panelists concluded (without reading Ceci's papers) that "these analogue studies" cannot be generalized to the real world.

It seems incredible that a psychological conference could be constructed with a seminar focusing on legal issues and the testimony of children in court, without a single person involved ever having heard of Ceci, who has contributed so much in this area. Indeed, this was the third day of the conference and there had been much talk of children's accusations of abuse, but not one mention of Ceci's research, which was why I felt obliged to pose the question. Often when I attend lectures I ask the speakers what they think of criticisms against them.

Immediately after the session a man connected with the conference demanded to know who I was, where I was from, and why I had asked the question. He was not satisfied with my answers and became visibly agitated when I tried to describe Ceci's experiments in greater detail. He soon gave up and informed me in a brusque tone that "everyone here thinks you are a *plant*." Perturbed, I entered the main hallway where I was confronted by Perskin, who asked if I had set out any literature in the bathroom. Apparently, someone had set out flyers from the Temple of Set, a satanic church, in the men's room!

"Immediately after the session a man connected with the conference demanded to know who I was, where I was from, and why I had asked [my] question. He was not satisfied with my answers and became visibly agitated... He soon gave up and informed me in a brusque tone that 'everyone here thinks you are a *plant.*'"

Conclusion

Conspiracy theories have operated in many societies at many times and may be seen from a social-psychological perspective as serving certain functions within society. Conspiracy theories may of course represent real conspiracies, but they may also act in a manner similar to racist stereotyping in which the targeted group is seen as deviant and deeply immoral (Moscovici 1987). Conspiracy scholarship is on the one hand irrational, while on the other "far more coherent than the real world, since it leaves no room for mistakes, failures, or ambiguities. It is, if not wholly rational, at least intensely rationalistic" (Hofstadter 1965, p. 36). Conspiracy theories offer individuals well-organized enemies against whom the self is defined; this offers them a guiding structure and purpose (Farr 1987).

I frequently observed a categorical rejection of the possibility that there could be "false" memories of traumatic events, and that anyone who made such claims must be "dirty" or a part of the "backlash," and that such claims could be dismissed without serious consideration. There was clearly an assumptive worldview or social representation that unified the audience and speakers, deviation from which would brand one as a spy. Actual debate was an anathema. The assumptions that united the group often veered toward conspiracism, though the particular elements of the conspiratorial plots could change from person to person (satanic cults, New World Order, etc.). Most, though by no means all, of the therapists appeared to be previously unaware of New World Order conspiracy, though some appeared receptive to such ideas. Many seemed to be familiar with and believe in the Operation Monarch conspiracy, despite the lack of credible evidence for this. Of course, belief in conspiracies does not necessarily indicate therapeutic incompetence. However, I would be worried if those therapists interviewing children who are suspected of being victims of sexual abuse believed that the biblical revelation was coming in the form of satanic U.N. troops sweeping up children in black helicopters.

We cannot know what effect these therapists' conspiratorial beliefs may have on their clients. What we can see from these anecdotes is that strong beliefs are highly resistant to discrepant input and they do have a certain persuasive power. An indication of the influence of this conference can be seen in a quote from Jerry Leonard, a physicist who attended and wrote a review of the conference (Leonard 1995), in which he stated:

> I came away with the opinion that cults are far more prevalent, well connected, sophisticated and dangerous than I had ever dreamed . . . apparently, this type of cult activity is fairly widespread. Police departments have stumbled on well organized nationwide child kidnapping rings. Ted Gunderson . . . described one case in which he personally uncovered an elementary school which had been built on a system of tunnels through which children were taken into neighboring houses . . . to participate in Satanic ritual abuse. . . . It is my personal view that the larger satanic cults are being manipulated by the federal intelligence and law enforcement agencies from behind the scenes.

Leonard informed me that this was his introduction to claims of cult child abuse. This testimonial demonstrates the persuasive power of the rumors that were put forth at this confer-

ence, at least to someone who was receptive to hearing them.

We have no way of knowing the percentage of practicing therapists who are represented by this style of thinking. Even if only a very small minority of the therapeutic community is represented, it is troubling to think of the effect these therapists may have on their colleagues, to say nothing of their clients. The theories presented at this conference may at times find wider appeal among more traditional therapists who are searching for evidence of cults, and it appears that such theories have enjoyed fairly wide popular circulation in the recent past (Victor 1993). Sherrill Mulhern (1991, 1994) has outlined the role played by conspiracy theories both historically, and at prestigious gatherings of psychologists. While the majority of psychological trauma specialists are not "conspiracists," they may at times be influenced by conspiracy claims, such as the claim that tunnels existed under the McMartin preschool, because such claims resemble or circumstantially support in some way the memories reported by clients.

The possibility of right-wing racist organizations using the present mental-health dilemma for their political gain is something therapists working in this area should be aware of. Therapists who only seek what is best for their clients may at times be vulnerable to propaganda put out by such groups. In the end it is the client, along with the client's family, who suffers. Whether motivated by such groups, claims that critics are active CIA agents who are engaged in a secret war against the American public, or that they are part of a nationwide backlash against belief in child abuse, only serve to make some therapists antagonistic to all forms of criticism, regardless of the motives of the critic. This is unfortunate because, as trauma therapist and researcher John Briere stated at the 1995 APA meeting, many of the criticisms have merit, and the field will be made better, not worse, because of them.

Note

I would like to thank Sherrill Mulhern for comments.

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We Need Science *and* the Humanities

Science and technology will serve humanity well only if our hearts and heads work in concert. Critical, rational thought (of a physical-science style) and respect for the world in which we live (seeking truth and beauty in the tradition of the liberal arts) are both needed.

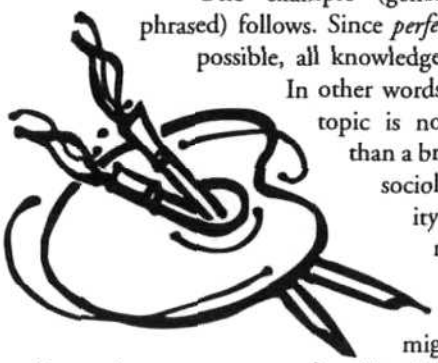
JOHN W. WHITE

Antiscience attitudes have been around for a long time, particularly in religious organizations. A new development has been the emergence of antiscience within a part of academia, traditionally a strong supporter of science. This antiscience movement has been centered in the arts, humanities, and social science departments. I lump these under the title "humanities" for brevity in this article.

Academic antiscience has been described in a book titled *Higher Superstition: The Academic Left and Its Quarrels with Science* by Paul R. Gross and Norman Levitt (Johns Hopkins University Press, Baltimore, 1994). It has also been discussed by many others in a variety of media, including articles in the SKEPTICAL INQUIRER by Paul Kurtz and Gerald Holton

(both in Spring 1994) and by Gross and Levitt (March/April 1995).

This academic antiscience problem is easy to describe. *Some college teachers in the humanities are seriously misrepresenting the nature of science: its current state of knowledge, the methodology of science, and its philosophical foundation.* Their message is that physical science (I include biology) is not significantly more reliable than other areas of knowledge; that it is a search for knowledge dominated by politics, bias, ambiguity, and uncertainty.



One example (generalized and paraphrased) follows. Since *perfect* objectivity is not possible, all knowledge is equally reliable. In other words, any given physics topic is no more dependable than a branch of literature or sociology. Since objectivity cannot be perfect, relative degrees of objectivity don't matter, and one might be well advised to forget the attempt to try for objectivity. These academics think that seeking knowledge through the use of observation and logic is illusory. The vast majority of physical scientists disagree.

These misguided scholars in the humanities simply do not understand physical science; *specifically they do not understand the role of operational definitions. (Quantities are defined by the operations that are performed when we measure them. Example: Length is the quantity that you obtain when you use a meter stick in the following way, etc.)* The "etc." stands for a lot of carefully described detail, but it is readily provided in an unambiguous form. The uniformity with which physical scientists pursue their work throughout the world provides testimony that operational definitions are relatively unambiguous. The human mind and human senses can be trusted to perform reliably when used with this type of carefully prescribed operation.

Physical science is based on experiments performed in the natural world. By limiting our investigations to those quantities that allow the use of operational definitions, the response of nature to experiments is independent of national borders, the gender of the experimenter, and so on. Models that scientists develop to explain nature must match experimental data with a high level of precision or the model is discarded, even if the proposer of the theory has a great reputation. Decisions about theories are decided by nature!

In one sense, physical scientists have defined their discipline in a realm that ensures objectivity and reliability. This is done by restricting their interests to those quantities that are appropriate for operational definitions. However, it is also true that the borders of topics that are amenable to operational definitions continue to grow rapidly. Science is continually moving into realms that were previously the sole domain of the arts or the humanities. One recent example is the research into the human mind and how it works. Science appears to be able to shed light on thought processes and emotional responses that were formerly considered a part of other (nonscientific) disciplines. There are many similar instances throughout history, such as that which occurred when the heliocentric model of the heavens was proposed.

The real measure of the reliability of knowledge is how that knowledge permits people to make predictions about future events. In this regard, no other field of human endeavor has come close to the record achieved by physical science in recent centuries. This ability to predict accurately also is evidenced by the performance of modern technology that provides countless (literally) specific examples of the reliability of science. Our model of the electron (its charge, mass, and other properties) is the same for every application: chemistry reactions, toaster design, cathode ray tube design, radar performance, and others. A similar case could be provided by the many applications of Newton's Law of Universal Gravitation. The list of successful scientific models and their applications goes on and on.

Operational definitions provide powerful concepts that can be expressed with unusual clarity; researchers around the globe can communicate and discuss issues with each other from an unusually uniform perspective. Use of operational definitions also makes the scientific method (comparison of theory and experimental data) more precise and efficient; it makes peer review (organized skepticism) more objective and reliable. The conclusion is that quantities in physical science (length, time, mass, etc.) can be discussed with a relatively high degree of accuracy and in a relatively (*much*) more objective manner than the quantities (love, loyalty, greed, etc.) that are encountered in other research disciplines such as the humanities. By the same token, the sciences are limited to those topics that are amenable to operational definitions.

Although the degree of objectivity obtained is not perfect in science, it is quite remarkable when compared to other disciplines. There is a significant gain in the knowledge obtained when the area of study can be examined more objectively. The degree of objectivity is the whole story with respect to reliability. Objectivity is harder to achieve for the humanities than for the sciences. This very point argues in favor of an attempt to attain a high degree of objectivity for practitioners in the

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Testing the ESP Claims of SORRAT

The Society for Research in Rapport and Telekinesis (SORRAT) claims to be in contact with spirit "entities" that can divine the order of sealed decks of cards. A test was designed using a sealed deck of ESP cards and carried out after the protocol was approved. Here are the results.

RICHARD WISEMAN, JOHN BELOFF, and ROBERT L. MORRIS

The Society for Research in Rapport and Telekinesis (SORRAT) claims to be in touch with spirit "entities" that produce a vast range of paranormal phenomena including rapping, table levitation, apports (the appearance of objects through objects), and the movement of objects inside carefully sealed containers or "minilabs." This Missouri-based group was founded in the 1960s by John Neihardt, a respected academic and authority on the Plains Indians. After Niehardt's death in 1973, the leadership of the group was taken over by Tom Richards and Alice Thompson (John Neihardt's daughter).

In 1977, William Cox, a well-known parapsychologist (since deceased), moved to Missouri to study the SORRAT phenomena and has done much to publicize its activities (see, e.g., Cox 1983). A few years ago Cox contacted us and claimed that the entities had developed a new skill, and were now able to divine the order of sealed decks of ESP cards (twenty-five playing cards with either a square, cross, star,

circle or lines on their faces) with almost one hundred percent accuracy. Cox explained that he simply placed the decks into the cellar of a home of a well-known SORRAT member, and the entities were able to write the order of the cards in the deck on a piece of paper. Cox asked us if we would like to send him a sealed deck and test the entities' abilities. Such an investigation appeared worthwhile because although SORRAT has generated much anecdotal evidence of ostensible psi phenomena (see, e.g., Richards 1982), the group has rarely been subjected to controlled testing (but see Phillips and McBeath 1982; Hansen and Broughton 1991; and Stillings 1991). For this reason we decided to carry out the following test.

Our experiment involved sealing a shuffled deck of ESP cards and sending them to Cox, from Britain to Missouri. Cox would ask the entities to divine the order of the cards in the sealed deck. He would then return to us this card order listed on a piece of paper, along with the sealed deck. The actual order of the cards would then be compared with the order discerned by the entities. To be successful, the entities must score at least fifteen out of twenty-five possible hits. This was well within the range of the claim (Cox had claimed that many previous trials had obtained twenty-five hits) and clearly above chance.

In past tests of this type, claimants who have failed to produce ostensible paranormal phenomena have stated that the experimental conditions were not favorable to their psychic abilities. To help prevent such misunderstandings, we asked Cox and Richards to examine our protocol prior to the experiment. After a few minor modifications they wrote back to say that the experiment had their approval and that they were looking forward to receiving our sealed deck. The test was on.

We thoroughly shuffled a deck of ESP cards, made a list of their order, and placed this list in a secure location at a university.

The ESP cards were then placed inside a commercially available, high-security, "tamper-evident" envelope. This envelope is constructed from polyethylene and cannot be slit and resealed without detection. It is sealed with a special self-adhesive strip that reveals any signs of tampering including attempts to peel off the strip, the application of heat or cold, and the use of various solvents. Each envelope carries a permanent, and unique, six-digit number to help prevent it from being opened and then replaced by a second duplicate, but undamaged, envelope.

Next, the sealed envelope was encapsulated in transparent industrial embedding resin. To prevent someone from breaking up the entire block (e.g., by melting it), and then replacing it with an identical but undamaged block, a number of drops of chemical dye were placed in the resin. These formed small dark spots of different shapes and sizes, which fell to different depths in the resin. The exact position and diameter of these dots were recorded such that it would have been very difficult to duplicate. The encapsulated deck was then placed inside a second tamper-evident envelope.

We realized that if the returned deck showed signs of damage or tampering, it may be difficult to decide if this would constitute evidence of cheating, damage in transit, or opening by another individual (e.g., a customs official). This was an important consideration, as Cox (1986) has claimed that possible signs of tampering on a similar package used in a previous test (see Hansen and Broughton 1991) may have been caused by a dishonest postal employee, possibly looking for jewelry. To minimize this possibility, a strip of paper was placed around the package. This explained that the package was part of a parapsychology experiment and asked individuals not to open the package. In addition, the labels carried our addresses and that of William Cox, noting that more information about the experiment could be obtained from either of these sources. Cox was asked to replace this strip of paper around the parcel when returning it to us.

We also thought it important that the entities make their predictions regarding the order of the cards in the deck in a completely unambiguous way. For this reason, we asked Cox to have the entities complete a call-sheet consisting of twenty-five sets of the five ESP symbols, each set corresponding to a position in the ESP deck. Cox had to ensure that the entities circled one of the symbols in each set, indicating their call for the card in that position of the deck. Any missing or ambiguous calls would count as a miss.

The secured package and call-sheet were dispatched to Cox. A few weeks later Cox informed us that the package had arrived and did not appear to have been damaged in transit. Two months later, we received both a completed call-sheet and a handwritten letter, allegedly from the entities. These documents had been mailed to another member of SORRAT (resident of California), who had then kindly forwarded them to us. The call-sheet contained twenty-five unambiguous calls (each circled in black ink). The letter read:

> Friend Richard–
> We have tried to rearrange the cards in your packet to approximate the calls we have marked. We often fail, of course.
> Shanti-expeditor/Rector/J.K.

Cox then returned the sealed deck to us. We inspected it for any signs of damage or tampering. To counter the idea that we may have damaged the package while opening it, we carefully filmed our examination. Both the outer tamper-evident bag and resin block were found to be free from signs of damage. The actual order of the cards was then compared with the calls allegedly made by the entities. They had obtained only eight hits.

As the entities had claimed also to reorder the cards, it was

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Strange Vibrations: An Afternoon with a New Age Psychic

It all sounds so convincing. Or does it?

J. D. LASICA

"This is very, very unusual," Emma says, leaning closer to inspect the whorls on my fingertips and the lines on my right palm. She pauses, then raises her eyes. "This is going to just knock you out of the water, Joseph."

I ease forward in the cream-colored armchair, keeping my feet flat on the carpet, careful not to "cross my energy." I peer down and study the lines of my palm. I look for patterns. Instead, I see a jumble of cracks and creases. Mostly, I see chapped skin.

But what do I know? I'm not the expert here. Emma is.

Emma is a spiritual counselor, a palm reader, a numerologist, a clairvoyant, a practitioner of divine sciences. She is, in a word, a psychic—by reputation, one of the bright rising stars of the psychic community in Northern California, I am told.

Emma fixes me with a soulful stare. "Are you ready for this, Joseph?"

I am ready. I'm sitting here today, in the sun-splashed living room of Emma's ranch-style home near the San Francisco Bay, for precisely this reason: to get in touch with my *inner path.*

I had briefly met Emma at a business function early last year. A vibrant, vivacious, life-hugging woman in her 40s, she has a bright, chipper voice, soft hands, and dark eyes that lock onto you and won't let go. A crystal necklace dangles loosely around her neck.

This is my first reading. And going in, I am just a bit skeptical.

But I am also open to the possibilities. My older sister believes in the paranormal. And close friends have told me tales of readings they've had by strangers, strangers who *knew* things about their pasts that no one could possibly know.

Later, after today's session with Emma, I'll contact two experts in the field of parapsychology to get their takes on this. But for the moment, I want to get my own impressions.

At the beginning of our session—Emma is letting me tape-record what turns out to be a 100-minute visit—I pay the $75 fee and, as instructed, smear black ink on my palms. While Emma goes off to meditate with my palm prints, I study a piece of paper that I'm instructed to sign before we can proceed. It's a legal waiver. Apparently, there have been cases of psychics being sued by clients who were bad sports about their bad karma. I sign the form. Welcome to fortune-telling in the nineties.

We chat for a while. I ask about her background, and Emma tells me she has had "the gift, some people call it ESP," since childhood. She has studied at the International Institute of Hand Analysis in Sausalito and at Psychic Horizons in San Francisco. She taught a workshop last spring at the international astrologers' convention in Anaheim. On a radio program last year, she read "the energy" of palm prints faxed in by listeners. She's currently coauthoring a book on astrological physiognomy (judging character by facial features).

Emma now sits directly across from me and asks my permission to do a reading. She recites a meditation prayer, repeating my full birth name three times. She invokes "the consciousness of the entire universe" so that she may be "an instrument for Joseph Lasica today and read what's up for him on a soul's level."

She gives me the 30-second crash course in the divine sciences: "Everything in the universe is energy; it just changes shape into different molecular structures. The DNA and RNA in the physical body is affected—*changed*—by astrological forces. This body you have is a skin bag to house your soul. And the earth is our big university. We all come many times. Basically, my role is to get people connected with what their mission's about, with what they're really here for."

I nod. We get down to some serious energy-reading.

Emma directs me to hold my palms up and press forward, as if against an imaginary window. She meets my hands with hers. She closes her eyes. "There are influences in your personal life that are blocking your energy, interfering with what you're here to do in this life. Whatever it is, you're not completely in control. There are influences and circumstances that are holding you back."

She pauses, as if waiting for me to jump in. But I'm not sold yet. I'm waiting to hear some solid, specific evidence. I want a smoking karmic gun.

Emma forges on. "You like to control events. But you're not a controller of people. You can be the most stubborn person in the world, if you set your mind to be, but there's also a part of you that can be easily manipulated by other people."

"Um-hum," I say. I'm still waiting for some snippet of insight that doesn't hold true for 95 percent of the population.

"You go, 'Um-hum,'" she says, a little impatiently. "Do you see that in your life?"

I feel a twinge of guilt for not being a team player. So I prattle on a bit before we move on.

Next, Emma inspects the curve lines at the base of my right forefinger. "See these lines?" she says.

I peer closer. "Which lines?"

"Right here," she says, running her finger across them. "These are the rings of Solomon. This is very, very unusual, Joseph. Very rare, only one or two out of a hundred people have this. It means you're extremely intuitive. You've got several gift markings—look at all this water energy! This curving energy, right here—" She pauses dramatically. "It means you're clairvoyant," she says at last. "Are you in touch with that?"

I'm surprised by this news. "Well," I say, "sometimes I *do* sense things before they happen. But I've never felt any special powers or abilities."

"You're just shut down," Emma says without missing a beat. "You're a closet clairvoyant. Your energy's blocked, you don't have a handle on it yet. You've got all these bursts of energy in your moon, in your spiritual realm, but you're resisting it. You have to learn to use that, it's meant for your higher good on the planet."

I'm still trying to get a handle on all the new buzzwords I'm hearing—"soul agenda," "karmic debts"—but Emma is already plunging into more personal spheres. She runs a finger across my right palm. "You've got trouble on your heart line,

sweetheart. See this bubble right here? Lots of emotional scars."

I draw back a little. She's hit on something, and her words resonate deeply. I feel my palms begin to dampen. I peer into her eyes and wonder, What does she see? What does she *know?* Has she tapped into some cosmic pipeline to the truth? But a moment later the thought intrudes: I'm not wearing a wedding band. And the skeptical side of me thinks, What 39-year-old single guy doesn't have emotional scars?

Emma runs a finger across my right palm. "Somewhere when you were a child you had humiliation and embarrassment, whether you're aware of it or not. It affected you so much that the energy created these lines." She shows me the bubbles on my heart line. "See? This is energy imprinting. You've got some issues that have not been resolved in the heart arena. This has to be healed. The emotional arena is not easy for you. It's not easy for you to express your feelings. Are you in touch with that?"

"Yes," I say. Still, I am waiting for a revelation, an epiphany, a moment of spiritual eureka. Instead, I am hearing generalizations that could be applied to any male in America.

Emma now takes my left hand. "Things have never come easily for you. You've had a tough life, things never seem to work out—whether it was your mother, your father, your family, the church, or whatever. You've got a lot of repressed feelings—hurt, anger, pain. You didn't have a 'Father Knows Best' childhood."

Well, no. Not exactly. But in fairness, my childhood fairly brimmed with humdrum. I had an uneventful upbringing in a typical middle-class suburban neighborhood. I'm unusually close to my parents; they just celebrated their 50th wedding anniversary.

But I don't mention this. I haven't come here to argue.

Emma now moves into the meaning-of-life realm. "You have a very old soul," she says. The room goes quiet, the seconds swimming past. "You've been hanging around this planet for a long time. Are you in touch with what you're here to do yet in this life?"

"No," I say, bracing myself. My pulse quickens. Souls, life missions—I haven't talked about this sort of thing for years.

"Your life in this time is about being an artist with something to say—writing, art, music. You have an enormous gift that you're not fully utilizing yet. Your time here is about carrying out the message to the world, to serve the higher good of the planet. The message you're here to bring out is to heal people. You're here to be a leader and to pass on new concepts. You're here to help the planet. This is big-time stuff, Joseph."

Instantly, I regret the fact that I'd mentioned my writing career to Emma when we met briefly several months ago. But something else bothers me. The patter I'm hearing strikes me as oddly familiar.

An ex-girlfriend, who believed in the supernatural, once related to me some of her psychic's findings: that she had a very old soul, and that she had an important mission to accomplish for the planet that would reveal itself within five years. (This other psychic also confirmed that my ex-flame—who had a special kinship with dolphins and whales—had originally come from another planet. This revelation did not do wonders for our relationship.)

The rest of my session with Emma races by. She discusses my numerology. She reads my fingerprints. I ask about my life line and what the future holds. But Emma won't talk about that, not at a first reading.

Instead, she speaks vaguely of "closures, endings, completions" that took place two years ago. This doesn't ring any bells. My last serious relationship ended four years ago; I've been in my job for eight years.

"You're now entering a period of illumination," Emma says. "The vibration over you for the rest of your life is a nine; it's about expanding you, stretching you. If one is in denial during this vibration, it's a hellacious life. Nothing flowers. If people with nine paths don't wake up, they're the most miserable people on the planet when they're seventy, eighty years old. But if you are open and you follow the truth about this path, then you can get over this hurdle. You'll look upon this day and recognize what it was all about."

She springs up and disappears into the bedroom. "I want you to be open to new ideas," she calls out. "I want you to accept personal growth and do some serious healing stuff. I want you to really dig deep and do the inner child work. If we work on our souls' growth, then our lives will flourish."

Emma reappears and hands me a brochure for a "Life Training Systems" seminar, where participants can discover their "ultimate destiny" (for a mere $1,200). She also hands me fliers for a half-dozen self-help groups: Codependents Anonymous, Workaholics Anonymous, and other 12-step programs.

"I am waiting for a revelation, an epiphany, a moment of spiritual eureka. Instead, I am hearing generalizations that could be applied to any male in America."

The leaflets brim with "positive affirmations": "I am a precious person. I am capable of changing. The pain that I might feel by remembering can't be any worse than the pain I feel by knowing and not remembering."

I am taken slightly aback by this. My mind flashes on a recent magazine article about the nineties being "The Twelve-Step Decade." Apparently, if you're not in recovery, you're in denial, and now, for the first time, I wonder if I need to get with the program.

Emma has some final admonitions. She urges me to open up my chakras, to explore the spiritual, to visit metaphysical bookstores, to work on meditation exercises, "to get out of your head, you're spending too much time in there." She sug-

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gests another visit in three to six months.

As I prepare to leave, she has one last parting gift: a rose-colored stencil cutout of the word "love." Across the bottom of the stencil she has penned, "I love you!"

"I want you to tape this to your bathroom mirror," she says.

I thank her. We hug. I walk outside into the bright afternoon sunlight, feeling a bit dazed, clutching the leaflets and the bright-colored love note.

Later, I convey the gist of my encounter with Emma to Charles T. Tart, an internationally known authority on parapsychology. Tart, a senior fellow at the Institute of Noetic Sciences in Sausalito, has written 11 books on parapsychology and altered states of consciousness.

He tells me that most psychics absolutely believe in the legitimacy of what they're doing. "The vast majority of psychics are honest," he says. "They're not out to fleece the public."

"Ray Hyman . . . says that researchers have consistently failed to find any evidence of psychic phenomena when controlled laboratory conditions are in place."

People go to psychics for two reasons, Tart says. "Some people go to test if there's anything to it or not. More commonly, they go to get some counseling with what to do with their life, to get some feedback on their problems, whether it's about love, relationships, money, sex, the meaning of life."

Tart believes that certain aspects of psychic ability—occasional flashes of telepathy, clairvoyance, precognition—do take place in everyday life. But he doubts that these abilities can be summoned at will or controlled during a psychic reading. "There's no evidential value to those sorts of claims," he says.

Ray Hyman, a professor of psychology at the University of Oregon in Eugene and a respected critic of parapsychology, takes a more emphatic view. He says that researchers have consistently failed to find any evidence of psychic phenomena when controlled laboratory conditions are in place.

"They've tested psychics and none seem to be able to do what they claim," says Hyman, a Fellow and member of the executive council of the Committee for the Scientific Investigation of Claims of the Paranormal. "There's no scientific evidence that psychics have any paranormal powers of any sort—other than good observational powers."

But it's not surprising, Hyman says, that a lot of people buy into these psychic parlor games.

"Anyone who's been to a reading knows that it's quite a powerful experience. A psychic has the upper hand right from the start. You're entering their world, using their language, following their rules."

What really makes it all work, Hyman and Tart both say, is this: Psychics are terrifically keen judges of character.

Hyman says: "The psychic reader can make an educated guess about your background by observing the way you're dressed, your weight, posture, body language, speech patterns. Then they go into their basic spiel, making it sound as if these general, universal problems we all have—about childhood, work, marriage—is a very personalized experience unique to you. All the while, they're picking up on subtle cues you give off—eye contact, gestures, the way you move your hands—to find out when they're hitting home or when they're cold.

"The person being read, meantime, is doing all the work. It's part of our nature to make sense out of nonsense, to find more meaning than is really there. What happens is, the psychic begins to tell you things about yourself that you already know, and so you'll feel validated by that. You'll overlook the things the psychic says that are dead wrong because you want the psychic to succeed."

Hyman says that a small minority of psychics—"fewer than ten percent"—are charlatans who use unethical methods, such as license plates and computer databases, to discover a telling personal detail in a person's background. But Hyman also says that many psychics "mean well and believe in what they're doing."

Hyman knows about the power and allure of the "divine sciences." He used to be a palm reader himself, as a teenager in Boston.

He tells this story: "After doing it for years, I actually came to believe in the 'science' of palmistry. Until one day, when a friend whom I respected, a professional mentalist, said it would make an interesting experiment if I would deliberately give readings that were the exact opposite of what the lines on the palm indicated. I tried it out. And, to my horror, my readings were as successful as ever."

Hyman chuckles at the memory. "Of course, it had nothing to do with the lines on people's hands. They're the ones who were creating the meaning, shaping the reading to make it fit into their lives."

I ask Tart and Hyman to make a judgment call: Do psychics serve any beneficent purpose?

Tart thinks they may. "We have a spiritual nature that's largely repressed in our society. We're not sure of what values and beliefs we can depend on anymore. We are desperately hungry for deep meaning. So we'll take this kind of spiritual junk food, tied in with all the mumbo jumbo, because we're looking for these little cores of truth. So in that sense, psychics are filling a social need, if you put the science aside and approach it from a therapist's perspective."

But Hyman thinks psychics contribute to Americans' sense of disillusionment. "We're the least scientifically literate society of any country in the civilized world, and this just feeds into that trend. Look at what's popular on TV: *Unsolved Mysteries, In Search Of*—all these pseudoscientific shows. It all gives people a false idea about where the source of our health and well-being comes from. It opens up all sorts of dangers of people being manipulated and deceived and exploited. Ultimately, it perpetuates the popular appetite for irrationality." □

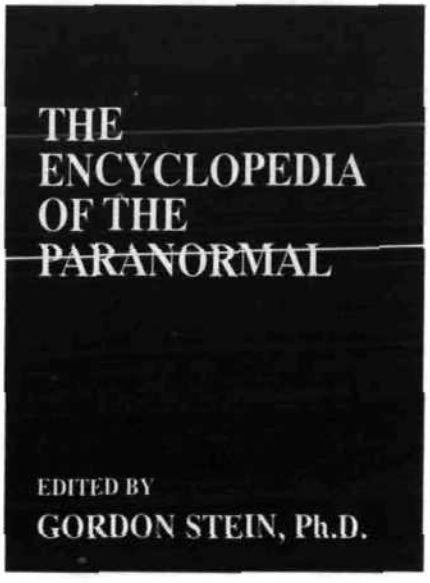
A Scientifically Based Encyclopedia of the Paranormal

WENDY M. GROSSMAN

The Encyclopedia of the Paranormal. Edited by Gordon Stein. Prometheus Books, Amherst, NY, 1996. ISBN 1-57392-021-5. 859 pp. Hardcover, $149.95.

Any skeptic who gets called with any regularity to represent the movement on radio or TV longs for a solid encyclopedia on the paranormal to crib from. The other night, I got a call from an astronomy type who had been asked to go on BBC Radio One to debate a prominent British astrologer. He wanted information about the astrologer, which was no problem. But then he asked a question that had me stumped: By what authority do astrologers claim to speak? What are the origins of beliefs about the characteristics of particular signs of the zodiac? I've done countless debates on astrology, and I didn't know this most basic information about the discipline.

Gordon Stein's *The Encyclopedia of the Paranormal* could have provided an answer to my astronomer's question. The section on astrology, written by Geoffrey Dean, Arthur Mather, and Ivan W. Kelly, traces astrology from its Mesopotamian origins through the Alan Leo-inspired rebirth in the early 1900s to the advent of today's personal computers, which make days' worth of calculations the routine work of a second. Along the way, they analyze the main arguments for and against, and critique the most significant evidence. If Geoffrey Dean's name sounds familiar, it should: he was the author, back in 1987, of a two-part series on astrology for the SKEPTICAL INQUIRER. Many of the other contributors' names should be just as familiar to *SI* readers: James Alcock, Paul Kurtz, Larry Kusche, Bernard Leikind, Persi Diaconis, Martin Gardner, and Terence Hines. The editorial board for the book



includes Carl Sagan (who also wrote the foreword), Antony Flew, and Stephen Jay Gould.

Many of the book's other topics have also been covered in *SI:* crop circles (written by Joe Nickell), palmistry (Ray Hyman), biorhythms (Terence Hines), and skepticism and the paranormal (Paul Kurtz). What's difficult to figure out is how the particular topics were chosen. There are entries for the mediums Leonora Piper, D.D. Home, Margery Crandon, and Eusapia Palladino, and 1960s guru Carlos Castaneda, but no separate entry for Uri Geller. Geller does get a couple of pages in the entry on CSICOP itself, and another under psychokinetic metal bending. The Society for Psychical Research, Charles Fort, and Harry Houdini get entries, but not James Randi (although he is quoted in a number of articles). There are vampires, exorcisms, coincidences, and miracles—but only a single paragraph on homeopathy, and no separate section or index listing for either the scientific method, the Heisenberg Uncertainty Principle, or quantum mechanics.

This book loosely shares its category with a number of other titles. Leslie Shepard's two-volume *Encyclopedia of Occultism and Parapsychology* (Gale Research, 1991) is much more complete on paranormal topics and claimants, but much less skeptical. James Randi's *An Encyclopedia of Claims, Frauds, and Hoaxes of the Occult and Supernatural* (St. Martin's Press, 1995) covers much of the same ground but in a series of short, popularly written entries. Simon Hoggart's and Mike Hutchinson's *Bizarre Beliefs* (Richard Cohen Books, 1995), reviewed

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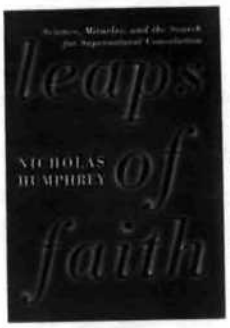
in this issue, is aimed at the mass market of people who have never thought about these issues rather than at informed skeptics. But the best all-round introduction is probably still Terence Hines's textbook-style *Science and the Paranormal* (Prometheus, 1983), which manages to be both readable and thorough.

But Stein is trying to do something different from all of these: His goal is to produce a scientifically based encyclopedia. This explains many of the puzzling gaps in coverage. Stein says for some subjects he was unable to find suitable scholarly experts. Rather than commission articles by people whose credentials or background were, he felt, insufficient, he preferred to leave some subjects out. At the same time, he limits his definition of "paranormal" to include only phenomena—or anomalies—whose truth would depend on a violation of currently known principles of science. This means he sticks to phenomena that are scientifically testable, leaving out purely religious phenomena. Exceptions like the Shroud of Turin are included because science is used to justify the claims made for it.

Fair enough. The result, though, is to leave you frustrated when the subject you want isn't covered. The sections on statistics and assessing coincidence are really useful, but most of us would really be glad to have a convenient place to grab briefings on the scientific principles that paranormal claims violate. How do you argue against the often-repeated claim that quantum mechanics supports a number of parapsychological claims?

It's inevitable that a book of this size and scope will be somewhat uneven, since no two authors will approach their topics in exactly the same way. So the graphology article (Barry Beyerstein) details the history and claims of graphology and summarizes the relevant research, but the Castaneda piece (Jay C. Fikes) is disappointingly diffuse. For a layperson who doesn't understand the methods and accepted practices of scientific anthropology but has read Castaneda's books and found their metaphors valuable, it's difficult to accept the dismissal of Castaneda's stories on the grounds that his reports are untypical.

That example illustrates why constructing an encyclopedia like this is such an ambitious and difficult project. Much of this encyclopedia is really excellent. I've already mentioned the astrology section; there are many other well-researched sections such as graphology and psychic healing (Chris French) that lay out the history and significant research relating to a particular topic. I'd like to think that this encyclopedia is only the first version of a work that will be regularly updated and enlarged. □



The Paranormal As a Search for the Soul

GORDON STEIN

Leaps of Faith: Science, Miracles, and the Search for Supernatural Consolation. By Nicholas Humphrey. Basic Books, New York, 1996. ISBN 0-465-08044-8. 244 pp. Hardcover, $23.

Nicholas Humphrey was a real surprise to the people who awarded the Perrott-Warwick Fellowship in Psychical Research at Cambridge University. Although he did get the fellowship (despite fears that he might be a skeptic), it turned out that he has produced a book, *Leaps of Faith,* that is strong critique of the whole idea of psychical research. Humphrey feels that the goal of most (if not all) psychical researchers is to search for the soul. In other words, there is a strictly religious motivation present. While I am certain that *some* psychic researchers (and probably *most* psychic believers) have this as their motivation, it is quite possible to be motivated to do psychical research merely because you are interested in whether there are new *natural* phenomena that we do not at present understand. Humphrey sees a strict dichotomy of motivations here, which does not allow for a middle ground.

Of course, Humphrey's skepticism about phenomena of a new sort in the world or universe is perfectly proper. All scientists should be skeptical. The result of Humphrey's skepticism in *Leaps of Faith* will delight some readers, for it certainly tries to downplay the likelihood that psi phenomena are real. Again, I do not fault the book for this, but I do think that the choices possibly ought to be a little broader. Humphrey writes well, and the book holds the reader's attention.

Humphrey does take some strange positions ("strange" in the sense that they seem to contradict some of his other ideas). Among them is the probably true idea that even the most fervent of skeptics (deep in his or her heart) *hopes* on occasion that the nonmaterial world really does exist. Of course, wishes and hopes are not the same as facts. People can hope that the soul exists without a single fact to support its existence.

Humphrey feels that many who believe in the paranormal are on what he calls a search for the soul. Their motivation is to have the world become a better place by harnessing the force of the paranormal, even though some would say that by its very nature the paranormal can never be explained or understood by science. He posits what he calls "The Argument from Unwarranted Design," by which he means that *if* an explanation of a phenomenon provides us with no real reason why it should occur as it does, then the real explanation of the phenomenon probably lies

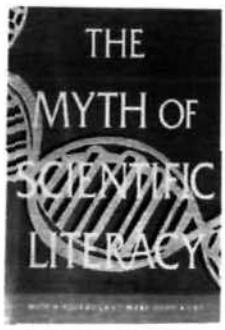
elsewhere. He gives the following example: Suppose your explanation of why a parrot speaks in English to you as you go by is that it has mastered the English language. Then it is pointed out that the parrot only says two things: "Who's a pretty boy then?" and "Strike a light." Had the parrot *truly* mastered the English language, it certainly would be able to say more than these two things. Therefore, your explanation is unlikely to be correct. Humphrey feels that a similar case can be made for the (non) existence of the paranormal.

Although Humphrey recognizes that the position of the skeptic would be much stronger if that skeptic could suggest how a particular effect was achieved, and could, in fact, duplicate the effect, he claims that there is no real *obligation* on the skeptic's part to do so. Another clever point made by Humphrey is that *if* you *really* had paranormal powers, would you demonstrate them by doing effects that conjurors could do by trickery (for example, bend keys or spoons)?

Among the other topics Humphrey discusses are: why people tend to accept a paranormal explanation of things when it is not the proper, logical thing to do; whether "traditional" science has actually been testing many of the major postulates of parapsychology all along; whether the actions of Jesus, as described in the New Testament, bolster the case for the existence of psi forces or not; and whether the abilities of conjurors to duplicate many of the results that so-called psychics claim are produced by their special "powers" says anything about the genuineness of those powers.

Leaps of Faith is a very thoughtful and instructive book. Humphrey has marshalled his arguments carefully and illustrated them well. It is the kind of book that both skeptics and believers in the paranormal would do well to read, and it holds a unique place in the literature for that reason. It should be mentioned in passing that this book has the title *Soul Searching* in the United Kingdom. □

Gordon Stein is a physiologist, editor of The Encyclopedia of the Paranormal *(Prometheus Books, 1996), and director of the Center for Inquiry Libraries.*



Dissecting Scientific Literacy

ROGER KLARE

The Myth of Scientific Literacy. By Morris H. Shamos. Rutgers University Press, New Brunswick, New Jersey, 1995. ISBN 0-8135-2196-3. 261 pp. Hardcover, $27.95.

What does the term *scientific literacy* mean? Does it mean knowledge of science facts and ideas? Does it mean familiarity with how science works? Does it mean having sufficient understanding to make independent judgments on science-based issues in society? Or does it mean all the above? Morris Shamos has taken on the monumental task of sorting all of this out in his book *The Myth of Scientific Literacy*. He is professor emeritus of physics at New York University. In addition, he has been president of the New York Academy of Sciences and the National Science Teachers Association.

In today's usage, scientific literacy has come to mean an understanding that enables the public to make independent judgments on science-based issues. Shamos asks if this is a reasonable goal and concludes that it is not, for only about 5 to 6 percent of adults in this country have the detailed knowledge of the workings of science to have this kind of scientific literacy. Will this number change dramatically any time soon? The author shows that this is extremely unlikely. Why this is so forms the heart of the argument presented in the book.

First, there is the nature of science itself. The author shows that for most people, science *is* interesting, but it is also hard to learn. Science, like any worthwhile human endeavor, takes some effort to master. Learning the language of mathematics adds another layer of difficulty. Of course, it is possible to teach much of science without mathematics. Yet it is through mathematics that one comes to see clearly the nature of science. For me, science became more interesting as I learned more about mathematics.

Then there is the difference between scientific thinking and what we would call "commonsense thinking." The author notes that while commonsense thinking works well for everyday living, a different kind of thinking is necessary for science. The idea of a black hole is certainly remote from anything we meet in our normal lives.

Finally, there is the way science is taught in schools. Science seems to be something "cut and dried," a subject presented as a package with no loose ends. Shamos points out that before scientific ideas reach textbooks, the scientific community has reached consensus on them. So the nature of science causes it to appear to be a done deal.

What about the majority of students not destined to become scientists and engineers? And what about the majority of adults who do not have scientific lit-

Roger Klare is a science writer in Athens, Ohio. He is writing a book about Gregor Mendel for young people, to be published in 1997 by Enslow Publishers.

eracy?

Throughout the book, Shamos builds the case for radically changing the goals of science education. He argues for science awareness in place of science literacy. He describes three principles of science awareness. They are:

1. Teaching an appreciation of science as an ongoing endeavor and a part of our culture.

2. Focusing on technology and how it affects personal health and safety.

3. Emphasizing the wise use of scientific experts.

The aim of science awareness is to get an idea of how science works. The stress is more on process and less on facts. Technology becomes a way to discuss something that is directly relevant to people's lives. It also serves to introduce the nature of science. The use of scientific experts may seem controversial to some. Yet since it is impossible for everyone to be a scientific expert, learning to use genuine experts is a necessary skill.

Several avenues to science awareness are open. All have their own strengths and weaknesses. As Shamos reminds us, there are no simple solutions.

Elementary school is a promising place for developing an appreciation of science. Children are naturally curious and full of imagination. In my own experience as a teacher at an after-school science program, I found the students very excited about the subject. I taught them what I knew, and they were ready for more. I functioned as a science mentor. That is one way Shamos suggests to fulfill some of the potential for science education at the elementary level.

Another way is to take a look at how we prepare elementary teachers to teach science. With all the subjects these teachers must teach, it is perhaps not surprising that science preparation is limited. Yet the preservice training is vital. As the author points out, the teacher, not the curriculum, has the primary role in shaping science education.

Television, magazines, and newspapers are vehicles for developing science awareness in adults. Informal science education in the mass media does have potential. On closer inspection, however, the problems with the mass media approach become apparent. Isolated science facts are given without context. Often journalists search for conflicting views that end up confusing the audience. And there is an ever-present fascination with pseudoscience topics as soft news and entertainment.

Not all the news about science presentations in the mass media is bad. But the public often ends up with a very limited view of science.

A limited view of science may have an unforeseen effect. Public opinion polls appear to show an inverse relationship between knowledge about science and knowledge about pseudoscience. The battle against pseudoscience is one reason for developing science awareness. Combating spurious arguments and beliefs demands constant efforts.

Science awareness is important for another reason. Science is fascinating. Shamos defines it as "a very *special* way that humans have devised for looking at ordinary things and trying to understand them." A few scientists, such as Einstein or McClintock, have seen further than most. To appreciate just part of what they saw is worth the effort. □

The Case of the Disappearing Mysteries

GORDON STEIN

Bizarre Beliefs. By Simon Hoggart and Mike Hutchinson. Richard Cohen Books (7 Manchester Square, London W1M 5RE), 1995. ISBN 1-86066-022-3. 224 pp. Oversize paperback, £13, cloth, £20.

The authors of *Bizarre Beliefs,* written for the layperson, examine and review the evidence for a number of supposedly paranormal phenomena. Included are such perennial favorites as the Bermuda Triangle, Nostradamus, crop circles, astrology, fire walking, dowsing, ghosts, and the Loch Ness monster. There is not much that is totally new or original here, but the authors do a fine job in objectively summarizing material. They have examined the skeptical literature, as well as the credulous material. In many cases, as is well known to skeptics, the "mystery" disappears as soon as all of the facts are presented. Once you know, for example, that there was a storm in the area and the wreckage was found later, all of the mystery about a ship's disappearance in the so-called Bermuda Triangle vanishes. It's easy to make mystery out of anything by withholding (intentionally or unintentionally) all of the facts about a case.

The authors properly point out that Occam's razor is a powerful tool for examining alternative explanations. Many times there is a simpler, naturalistic explanation, and that is the one we should accept if we are forced to make a choice. A healthy skepticism pervades the author's presentation. Again, this is the proper attitude for scientists and philosophers, especially when results in one direction will cause many thoroughly tested explanations to have to be reevaluated.

The usefulness of *Bizarre Beliefs* will be largely for the nonspecialist who wants a brief, accurate, and clearheaded summary of the present knowledge about the various phenomena mentioned, plus some very nice color photographs and drawings. □

NEW BOOKS

The Night Is Large: Collected Essays, 1938-1995. **Martin Gardner.** St. Martin's Press, 175 Fifth Ave., New York, NY 10010. 1996. ISBN 0-312014380-X. 672 pp. $29.95, hardcover. A magnificent new collection representing the brilliant thinker and critic's lifelong interests in seven areas: physical science, social science, pseudoscience, mathematics, the arts, philosophy, and religion. "Martin Gardner is one of the great intellects produced in this country in this century," says Douglas Hofstadter on the cover, and the contents of this work appropriately reveal Gardner's astonishing breadth and depth of knowledge and ideas. Each is personally introduced by Gardner, and many are followed by his amusing and informative updates or postscripts.

Bizarre Beliefs. **Simon Hoggart and Mike Hutchinson.** Richard Cohen Books, 7 Manchester Square, London W1M 5RE. 1995. ISBN 1-86066-022-3. 224 pp. £12.99, paperback. This beautifully illustrated book *looks* like many of those slightly oversize pro-paranormal books that attract wide readership because of their striking color visuals and easy-to-read material about popular claims. But this one is *skeptical.* It's the kind of book skeptics have been wanting: popular in format, skeptical in treatment. Subjects include UFOs, alien abductions, the Bermuda Triangle, crop circles, cold reading, prophecy, spiritualism, psychic detectives, astrology, graphology, fire walking, psi, biorhythms, hypnosis, dowsing, ghosts, curses, monsters, and coincidence. See review, page 54.

Cults in American Society: A Legal Analysis of Undue Influence, Fraud, and Misrepresentation. **David Hominik.** American Bar Association Report. *ID Number: "ABA."* $12 in USA, $14 outside USA. A report prepared for the American Family Foundation and the Cult Awareness Network by the ABA's Commission on Mental and Physical Disability Law. Deals with both legal principles and case law regarding undue influence and fraud and misrepresentation, as applied to cults. An appendix discusses both law and recent decisions about standards for expert testimony.

Faces in the Clouds. **Stewart Guthrie.** Oxford University Press, Inc., 198 Madison Ave., New York, NY 10016-4314. 1995. ISBN 0-19-506901-3. 336 pp. $16.95, paperback. An anthropologist argues that religion and related phenomena may best be understood as anthropomorphism—the attribution of human characteristics to nonhuman things and events. This anthropomorphism stems from a strategy that interprets all ambiguities as those possibilities that matter most. The strategy can lead to mistakes but also to vital discoveries. Understanding it helps illuminate both religious and secular experience.

Einstein, History, and Other Passions: The Rebellion Against Science at the End of the Twentieth Century. **Gerald Holton.** Addison-Wesley Publishing Co., Inc., One Jacob Way, Reading, MA 01867. 1996. ISBN 0-201-40716-7. 240 pp. $14 in USA, $19 in Canada, paperback. A noted physicist and historian of science attempts to clarify the debate over the rightful place of science in our culture. Using Einstein as a concrete example, he addresses the modern countermovement against science by influential intellectuals outside science. He refers to this as "a seismic shift" away from the belief espoused since the Enlightenment that science and technology are, on balance, positive forces. Through his exploration of Einstein's thought, Holton provides an eloquent warning against today's "Romantic rebellion" that blames science for all our social ills and replaces it with New Age "ways of knowing."

The Outer Edge: Classic Investigations of the Paranormal. **Joe Nickell, Barry Karr, and Tom Genoni, editors.** Committee for the Scientific Investigation of Claims of the Paranormal, Box 703, Amherst, NY 14226-0703. 1996. 133 pp. $10, paperback. This short, handy book introduces the reader to evaluating the paranormal by reproducing thirteen classic articles from the SKEPTICAL INQUIRER, including Carl Sagan's "The Burden of Skepticism" and Ray Hyman's "'Cold Reading': How to Convince Strangers That You Know All about Them." Others deal with full-moon myths, scientific tests of astrology, UFO hoaxes, psychological explanations of alien-abduction experience, nonmysteries of perception such as the great stone face and the face on Mars, near-death experiences, firewalking, spontaneous combustion, Sasquatch "tracks," and the Columbus poltergeist case.

—*Kendrick Frazier*

ARTICLES OF NOTE

Anderson, Robert B. "The Case of the Missing Link, Parts 1 and 2." *Pacific Discovery*, Spring 1996: 15-20, 32-33. An extensive analysis of the Piltdown-man fraud exonerates the scientists who have been implicated in the fraud and concludes that the hoax's perpetrator was Arthur Conan Doyle. (But, see the next item . . .)

Gee, Henry. "Box of Bones 'Clinches' Identity of Piltdown Paleontology Hoaxer." *Nature* 381:261-262, May 23, 1996. A trunk discovered in the attic of London's Natural History Museum appears to have provided vital evidence allowing the Piltdown-man fraud—one of the most successful hoaxes in history—to be put to rest. Marked with the initials of Martin A. C. Hinton, a curator of zoology at the time of the fraud, it contains bones stained and carved in the same way as the Piltdown fossils and associated artifacts. Hinton appears to have been the hoaxer.

Hyman, Ray. "Evaluation of the Program on Anomalous Mental Phenomena." *Journal of Parapsychology* 59(4):321-351, 1995. This is the text of Hyman's evaluation of government-sponsored research of psychic functioning, primarily remote viewing. The evaluation was commissioned by the American Institutes of Research (AIR) for the Congress and the CIA, and conducted at SRI International and Science Applications International Corporation over the past three decades. (See Hyman's two articles about this in the March/April 1996 SKEPTICAL INQUIRER). Hyman's text is preceded by the text of statistician Jessica Utts's evaluation (pp. 290-320) of the same material and is followed by her response to Hyman's report.

Hyman, Ray. Review of Richard Wiseman and Robert L. Morris, ***Guidelines for Testing Psychic Claimants.*** *Journal of Parapsychology* 59(4): 381-384, 1995. Review offers reservations about the guidelines offered due to their brevity, lack of detail, and failure to recognize some inherent differences between evaluating psychics and conducting other kinds of scientific studies.

Holden, Constance. "Anti-Evolution TV Show Prompts Furor." *Science* 271:1377, March 8, 1996. News story about the anger of biologists and other scientists over the "absolutely shameful" (in the words of one of them) pseudoscientific antievolution "documentary" "The Mysterious Origins of Man" broadcast by NBC.

Kolata, Gina. "In Quests Outside Mainstream, Medical Projects Rewrite Rules." *New York Times,* June 18, 1996, pp. A1, B7. After the spate of news articles last year about the supposed new mainstream respectability of alternative medicine (including articles in the *New York Times*), this excellent article examining the matter critically and skeptically is welcome. Subtitled "Alternative Medicine: Research Without Results," it relates numerous criticisms of the research sponsored by the government's Office of Alternative Medicine, indicating that the lack of controls and poorly designed study protocols essentially doom the studies to failure. Six letters of response appear in the *New York Times,* June 23, p. 12.

Raloff, Janet. "When Science and Beliefs Collide." *Science News* 149:360-361, June 8, 1996. A good report on the breadth of serious misunderstanding or conscious rejection of science in the United States today. Reports on research into this by Raymond Eve discussed at a symposium at the American Association for the Advancement of Science annual meeting, with additional comments from Gerald Holton, Eugenie Scott, Paul Kurtz, Jon Miller, and Noretta Koertge.

Scott, Eugenie C. "Monkey Business." *The Sciences,* January/February 1996: 20-21, 24-25. One hundred and fourteen years after the death of Darwin, seventy-one years after the Scopes trial, and nine years after the Supreme Court struck down laws requiring equal time for creation and evolution, the struggle over evolution in the schools is alive and well. Now, instead of lobbying for state laws to put creation "science" in the classroom, advocates pressure local school boards and teachers. The article reviews the background and recent skirmishes and urges scientists to get involved but to avoid debates and preserve the middle ground (don't make people choose between mainstream religious faith and evolution).

Simons, Marlise. "Land of Descartes Under the Spell of Druids?" *New York Times International,* April 30, 1996. Article from Paris reports on how France, the emblem of rational thought, is these days giving much attention to seers and psychics. The French are reportedly consulting clairvoyants and numerologists in greater numbers than ever, and are also seeking dowsers, healers who work via telephone, and handwriting interpreters.

Zhou, Meiyue. "Scientists Seek Allies in Fight Against Pseudoscience." *Science* 272:807-808, May 10, 1996. Article from Beijing recounts the uphill battle scientists and engineers in China are waging against the popularity of pseudoscience in the world's most populous country.

—Kendrick Frazier

Humanities *from page 44*

humanities.

Science has not yet shown promise for measuring "greed" or "generosity" via operational definitions that are unambiguous and widely agreed upon. Perhaps science will never do so. I suspect that most scientists would agree that greed and generosity are *real* and important; as well as being difficult to understand. The ambiguity involved in measuring crucial concepts like greed and generosity brings into focus the challenge encountered when trying to achieve academic progress in the humanities.

The humanities also are handicapped by the fact that the number of important variables can be large, and the effects of many variables are difficult to isolate. Some of them may even be unidentified. The fact that many scholars in the humanities and social sciences are not well versed in physical science means that they may not see their own knowledge base in a sensible perspective. This can result in misguided views about physical science that, in the long run, can only damage the very disciplines that they cherish. They may fail to offer insights where their perspective is unique; and they may try to provide understanding where their knowledge is least reliable.

The humanities are extremely important to our society; and they are fascinating. The same can also be said for physical science. Still, physical science can claim to be *more* objective and more reliable. This relative degree of objectivity and reliability matters a great deal, but it is not sufficient to provide all of the solutions for humanity's problems. Science and the humanities must collaborate.

In fact, it is impossible to fully separate science from art. It is silly to try to separate them. Everyone can (and must) understand and employ both approaches in almost every aspect of life.

Learning to discriminate the degree of reliability associated with ideas is a real test for an educated individual. Each issue should be examined on an individual basis regarding its reliability. In terms of value, research is appropriate on all topics; and all knowledge is important. Still, knowledge that is of low reliability may be held to be of less value; and this creates a problem that the humanities and the social sciences must address by educating the populace and its political leaders. There are many issues that the arts and humanities should bring to the attention of society with both a persuasive and positive message. In the long run, launching silly attacks on science can only be self-destructive for the humanities.

The point is that science and technology will serve humanity well only if our hearts and heads work in concert. Critical, rational thought (of a physical-science style) and respect for the world in which we live (seeking truth and beauty in the tradition of the liberal arts) are both needed. Put simply, we need all the knowledge we can get. This is the goal of a classical education in which we learn *how* to think broadly, rather than *what* to think narrowly.

A philosophical or political position that assigns the same degree of reliability to all knowledge equally is dangerous for society. The flight from science, reason, and objectivity is cowardly; and it is a matter for serious concern. The acquisition of knowledge is a serious task that requires thought that is caring, thorough, and critical. In the future (as was true in the past) courage will be needed to perform this task. □

Art, Reason, and Reality

JANE HADDAM

The first time it happened, I thought it was a fluke. The only thing that bothered me was that none of the reviews I'd read had warned me. There, right at the center of Alice Hoffman's otherwise relentlessly mundane novel *Seventh Heaven* was a witch. Norma could cast spells to make people smaller and communicate telepathically with runaway housewives and grade school principals. She could do this while standing in line at Sears, worrying about the brand of snow shovel she was buying that she didn't know how to use anyway.

Finding elements of the supernatural in American fiction is, of course, nothing unusual. From Nathaniel Hawthorne to Stephen King, there has always been an element of the Gothic in the American imaginative landscape. During most of the twentieth century, however, American *literary* fiction has been determinedly realistic. With one or two exceptions—Joyce Carol Oates comes to mind—the writer who wanted to produce fiction-as-art over the past eighty years dedicated himself to a naturalist tradition. Dreiser wanted to show what life was like for the poor and disenfranchised. Hemingway wanted his readers to understand what it really felt like to be in a war. Roth committed himself to recreating the experiences of American Jews, without favor. Every once in a while one of these writers would produce a fantasy, like Roth's about the man who turned into a gigantic breast, but it was clearly labeled a fantasy. There was no confusion about what you were to believe could happen in the real world.

American popular fiction, on the other hand, has always been enamored of the fantastic, the religious, and the paranormal. Even the hard-boiled private eye novel, that quintessential home of "gritty realism," has really been a fantasy, the daydream home of people who would prefer to think of themselves as possessed by cynicism rather than the devil. Still, hard-boiled private eye novels were considered "literary" exactly to the extent to which they were considered realistic. The more obviously unrealistic productions—the vampire and werewolf novels, the ghost stories and tales of religious conversion—spent a great deal of space setting the stage to make their premises more believable. I have written fourteen detective novels, and in only one of them did I have an element (highly ambiguous) that might be considered paranormal. I spent three pages preparing the reader for it and hedging around it in every way I could think of, because I didn't want my work to be treated as a joke. All the popular writers of the fantastic, from Stephen King to Dean R. Koontz, treat the paranormal as in need of vigorous defense if it is to be acceptable in fiction. No modern writer of ghost or horror or detective fiction would assume her reader's willingness to swallow the existence of ghoulies and goblins and beasties. Even Frank Peretti's religious novels, aimed at an audience of born-again and Pentecostal Christians, surround their miracles with explanations and theories, to make the unscientific sound scientific and therefore acceptable for belief.

Why is literary fiction seemingly giving up on the naturalistic tradition?

In Alice Hoffman's *Seventh Heaven* there is no attempt to explain or justify the use of the paranormal at all. It is just there, like the Bosco chocolate syrup and the Metrecal weight-loss milkshakes that turn up in every one of the nearly identical houses in her 1959 Long Island suburb. In *Turtle Moon,* the Hoffman novel that followed *Seventh Heaven,* there is a lovesick ghost and a dog with telepathy. In *Practical Magic,* the two old women who serve as foster parents to the girls whose stories are at the center of the novel are witches with a vengeance. It's what they do for a living.

If this phenomenon were restricted to the work of Alice Hoffman, there wouldn't be anything to worry about. I could either decide not to read Alice Hoffman's novels, or only to read them when I wouldn't mind if the fat middle-aged housewife checking out the price of Kraft Singles in Safeway is also able to move large objects just by thinking about it. Unfortunately, over the past ten years, more and more self-consciously literary novels, the kind of novels that get reviewed in *The New*

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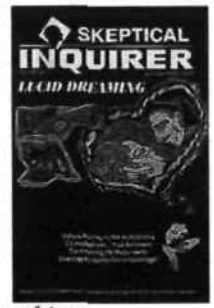

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York Times Book Review, The Atlantic, and *The New Yorker,* have wandered into the territory of the semi-real. What is more discomforting is that none of the highbrow journals of review has thought it important to mention that they have. In the reviews of Ann Beattie's *Another You,* there were complaints of a lack of the usual fire in Beattie's writing, but no mention of the fact that two of the characters are connected in some cosmic, unspecified way that involves telepathy across decades.

Sometimes these books are attempts to address the differences between Western and Eastern ways of looking at the world, with the Eastern (predictably) coming off the winner. In Amy Tan's *The Hundred Secret Senses,* one of the two main characters is a ghost come to earth to return the reincarnated spirit of her friend to the happiness she was not able to achieve when the two of them were together in a former life. This is presented as the silly nonsense of an uneducated Chinese immigrant until the end of the book, when it turns out to be true. In the novels of Louise Erdrich, Native American healing rituals fight valiantly against the rationalistic excesses of the white scientific civilization that is destroying a noble people.

Most of these novels, however, throw in elements of the supernatural simply because they do. Unlike popular horror fiction, the supernatural is not the point of the stories they tell. It's just another detail, like the brand names and car makes and suburban street names (Maple Way, Lilac Lane) that dot the prose like pats of butter. When one of the three women in Jane Smiley's *A Thousand Acres* lies down on the bed in her childhood room and gets up with a recovered memory so paranoically complex it could have done duty as an Oliver Stone screenplay, none of the other characters is even surprised.

My question is this: at what point did we become a society in which reports of the paranormal ceased to be remarkable, in which even highly educated people were willing to accept telepathy and spells as easily as they accept Big Macs and fries? The readers of these books are assumed to be at the top of the intellectual pyramid. Licensed practical nurses and waitresses at Denny's don't get their advice from *The New York Review of Books.* Licensed practical nurses and waitresses at Denny's have more sense than the present cultural elite. Nobody is going to present them with an ambulatory zombie without giving them some plausible explanation as to how a dead man could walk. It might not be an explanation that impresses scientific people, but it will at least be an explanation. Alice Hoffman gives no explanation for her witches and telepaths at all.

Other people worry about the religious right. I worry about a climate of unreason where the world is no longer wanted as a rationally knowable place. I worry about a highly privileged group of people with a great deal of influence over the content of their culture who have given up any pretense of fidelity to rationality or even common sense. I worry about what it means that *Harper's* and *The Atlantic* and even *Vanity Fair* know what is dangerous about fundamentalist Baptists and militant creationists, but don't know what is dangerous about rampant acceptance of the paranormal as fact.

In the meantime, I have some advice for anyone in the skeptical community who wants to read contemporary American fiction: go for the popular stuff. If there are elements of the supernatural in the plot, the cover copy will tell you so. If there aren't, you may very well find yourself reading one of the last great crusaders for the primacy of logic in human affairs. All the people I know who could fit that description write crime novels. □

Jane Haddam is the author of fourteen detective novels.

What Constitutes Scientific Evidence?

WAYNE R. ANDERSON

I just finished teaching an astronomy course at Sacramento City College on the possibility of extraterrestrial life. Students were expected to turn in weekly writing assignments on various topics related to the subject. As their final such assignment, I asked them to explain whether they felt the government was engaging in a grand UFO cover-up. They were told to state their conclusion, give evidence for it, and explain why they thought the government might be doing this. We had not yet discussed this topic in class, so all ideas were their own.

About half of the class was skeptical of a cover-up and of UFOs (as alien visitors) in general. The other half expressed varying degrees of credence, ranging from openmindedness, leaning toward belief, to absolute conviction that the government knew of alien visitors but was keeping this knowledge a secret. Up to this point, I was not really surprised. It was the *evidence* cited by the believers that shocked me.

Only *one* person cited a book as evi-

dence, in this case *Above Top Secret* by Timothy Good, published in 1988 by William Morrow and Company; this person cited no other evidence except the book. Almost all the other evidence came from television programs: the made-for-television movies *Fire in the Sky* and *Roswell;* and "Alien Autopsy," on the Fox network. Abductee interviews were also cited, but it was unclear whether they came from television, tabloids, or other written sources. Although no one used it in their papers, the *X-Files* was cited in class discussion as presenting a credible account of a government cover-up.

Why would the government be hiding the existence of aliens from us? Most felt that it was to prevent societal chaos and to garner the benefits of alien technology. Yet none of the students (save one) suggested any type of technology that might have resulted from this secrecy. The lone person who did suggest technology cited computers, color television, and "medical advances," apparently totally unaware of any genealogy of research leading up to these developments.

What astonished, even frightened, me about these papers was the almost total reliance on *television entertainment programs* for *evidence* on a controversial and complex subject—by *college students.* To be fair, in discussion some students were openly dismissive of considering television entertainment as evidence of anything. And the class members did look quite sheepish when I drew their attention to the low-quality evidence they had used. Nevertheless, nearly half of the members of this college class were unable to cite any other evidence except television entertainment on a science topic. Now who says that television is innocuous entertainment but nothing worse? If many of these students have been getting *all* of their information on UFOs from television entertainment programs, can it be much different with other subjects? □

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Conference *from page 7*

phone numbers of people who will talk to them quickly when they're researching relevant topics so they can make their daily deadlines. They are frustrated, too. When they try to cover a story responsibly, too often they find themselves calling scientists who won't talk to them, either because they disapprove of the topic being written about, or through lack of trust. The suspicion between scientists and the mass media appears to be mutual, by the way. Mathematician John Allen Paulos tells us during the afternoon panel that his academic colleagues were deeply suspicious when he wrote something that was "read by more than nine people." (His *Innumeracy* was on the bestseller list for five months.) This may be partly another generation gap. The UK's young psychologist Richard Wiseman, whose Saturday morning talk was one of the few where you could actually read the slides, fields an annual experiment with and through the UK media.

But in general, everyone agreed. Science needs better PR. Science has an image problem.

Perhaps it does. By the second day, attendees were still talking about the first panel, which concentrated on science's need to communicate itself better to the mass media. Featured were Paulos, Gerbner, Adams, Italian TV journalist Piero Angela, and moderator Milton Rosenberg, a professor of psychology from the University of Chicago. All but Paulos are over fifty. All are male.

Rosenberg has an unmistakable radio-quality voice; he hosts *American Reader* on PBS for WGN Chicago. What grabbed conference attendees' attention was not Paulos's rundown, with digressions, of the contents of his latest book, or Angela's careful statistical records showing that his skeptical TV programs do affect people's beliefs but that some of the effect wears off over time. It was the moment when medical broadcaster Dean Edell phoned through from his call-in radio show with his audience of five million people via four hundred radio stations to invite the panel to talk to America. Rosenberg said hello, and passed the microphone to George Gerbner, who didn't realize this was a planned part of the session and told Edell, "We are not talking to you. You are eavesdropping on our session. . . ."

One audience member later pasted the panel for this, advising them that if they really wanted to understand why science gets short shrift on television they should look in the mirror. Some agreed with Gerbner; one audience member was so offended by the interruption he walked out. (Some people, though, were far more offended by the interruption the following day, when four CSICOP officials took the stage halfway through the morning panel for an unannounced spot of fund-raising. CSICOP reports, however, that the fund appeal was very successful, raising over $200,000 in cash and pledges.) But the Edell fan at my lunch table the following day was still upset.

By then, a day and a half of largely theoretical presentations had left me hungry for practical demonstrations and reports of work in progress. I am not good at passively consuming skepticism. I am normally either a working skeptic, irregularly called in to respond to claims on TV shows, or as journalist chasing after information. So the session on therapeutic touch was especially interesting, as it covered a new topic under active investigation by the Rocky Mountain Skeptics. I longed for more sessions like that—the skeptical equivalent of scientific "poster" sessions—especially after the Australian Skeptics announced at the World Roundup on Sunday morning that they had, three weeks earlier, busted a psychic scam by infiltrating a member onto the scam outfit's staff.

Meanwhile, I have a question I wish someone would answer. How do you explain to a challenging questioner the difference between a "good" and a "bad" scientist when both skeptics and believers quote scientists' findings to bolster their points of view? It's bad science, though human, to judge the quality of

scientists by whether or not one agrees with their conclusions.

This came up Saturday morning, when statistician Jessica Utts and Ray Hyman went head to head over the future of parapsychological research. Utts is bright, clear, and easily understood, and she thinks it's time for parapsychology to move on from meta-analyses and statistical proofs that psi exists and focus on possible mechanisms. Which, she asked the audience, is more likely to convince you? Which, therefore, should we research? Ray Hyman, who reviewed Utts's work, praising it as some of the best work done in parapsychology, ended up agreeing on this point even though his critique concluded that a psi effect was not proven. Hyman outlined numerous problems with the experiments she cites and said her conclusion that psi had been demonstrated was "a big leap" and unjustified. "If Jessica's right, she's given us a promissory note, not data. We don't do science on a promissory note. We do science on what we produce."

I've lost track now of who it was that compared a skeptics' conference to a *Star Trek* convention without the costumes (and without the coffee breaks, parties, informal late-night sessions, public bulletin boards, and participants' list). But I was reminded of it when an English skeptic told Utts her results were due to "an excess of female power."

It would be less fair to apply that to the Florida-based retired candyman from Minnesota next to me on the bus on Saturday. ("Why did you want to come?" "I have nothing else to do.") Then there was the graduate student who paid his way to the conference by selling "genuine Big Foot tracks" over the Internet. There was even a guy who slipped me a copy of the history of CSICOP he wrote for the *Journal of the American Society for Psychical Research,* and seemed almost proud to tell me CSICOP never refers to it.

After the conference I go back to Ithaca, New York, where I lived for eleven years. The occasion is a hands-on science workshop for journalists that includes presentations from sociologist Trevor Pinch and psychologist Daryl Bem, as well as the Virginia Polytechnic Institute's Henry Bauer. Bauer says the scientific method is a myth. Bem claims success in replicating the Ganzfeld experiments (and says in passing that Hyman is the most knowledgeable critic of these studies). Pinch spends his presentation talking about CSICOP, saying that CSICOP has done many good things, but he is unhappy about the case of Jacques Benveniste (of "remembering water" notoriety), who he says was a serious scientist whose career was destroyed by a "kangaroo court." (Whether that's the case or not, I pointed out to Pinch that CSICOP was not involved in any way with *Nature*'s investigation at Benveniste's lab in France other than to report on it after it was published in *Nature.*)

Pinch sparks a protective instinct. CSICOP is not perfect, but it's all we have in the way of organizations doing this work. This gets reinforced when I call an old friend to say hi. She can't talk right now: she thinks her son has mono, and she's waiting for the homeopath to call. □

SORRAT *from page 46*

decided to open the resin block itself. Again, this was carefully filmed. An industrial circular saw was used to cut off three sides of the block. The block was then pried apart, and the card case removed. We then removed the cards and compared the order with the deck order made before the cards were mailed to Missouri. All twenty-five cards were in the same order: The entities had failed to reorder the deck.

In short, SORRAT failed on two counts. First, the entities obtained only eight hits. This is not statistically significant; it falls below the fifteen hits required by the experiment; and it is considerably below the twenty-five hits that Cox claims has occurred on past occasions. Second, the entities claimed to have rearranged the order of the cards in deck. However, when the deck was opened, all twenty-five cards were in the same order as when we sent them from Britain.

This failure does not agree with the results obtained by at least two other experiments reported by Cox, both of which obtained a much larger number of hits (Cox 1992a). This discrepancy could be interpreted in several ways. It is possible that the security precautions used in those previous studies were not as effective as the controls used in this study. An alternative view was presented by Cox (1992b), who noted that he was disappointed with the results and believed them due to either Richard Wiseman's unfavorable attitude toward SORRAT's research, or the fact that:

> The provision of an unfamiliar printed form for entering calls via the encircling of symbols from among five columns of them . . . presented problems . . . which had not occurred to me when we agreed to the procedure.

Either way, given the time and resources that we invested in this study, we must agree with Hansen and Broughton (1991):

> Researchers must decide where to focus their energy, and for us it appears that the SORRAT phenomena are not apt to produce a payoff for further research.

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It's Not Journalism

I'm afraid Bryan Farha went to a lot of trouble for nothing with his analysis of the journalistic errors in Fox TV's *Sightings* (*SI*, May/June 1996). The show is not journalism.

It is true that "journalism requires a massive effort for accuracy," but entertainment programming about little green men doesn't. The semantic errors discussed in the article would be obvious to a good journalist, and I suspect a good entertainment producer would notice also. The difference is that the journalist at least intends to be truthful and objective, while the entertainment producer has no such obligations. Dissecting the show for journalistic errors is like criticizing *Home Improvement* for not showing you how to fix your water heater.

Go ahead and criticize *Sightings* for being a slipshod compilation of scary stories, all presented with the obvious intention of making you believe. And there's room to address the fact that the producers don't mind if lazy viewers think it *is* journalism. But don't criticize it as poor journalism.

I'm a professional journalist, and I know bad journalism when I see it. That's not journalism of any sort.

Greg Freeman
Decatur, Ga.

Alien Abductees and Fantasy Proneness

Before responding to Joe Nickell's article on alien abductees and fantasy-proneness (*SI*, May/June 1996), I should state that I do *not* accept the extraterrestrial hypothesis, and do in fact think that some form of fantasy experience most likely accounts for the phenomenon.

That said, I must find fault with Nickell's article. First, he says that Wilson and Barber did not include alien abduction in their study because only a "handful" of cases had been reported. But three years before their article, an anthology of selected cases had appeared (*Alien Abductions*, ed. D. Scott Rogo, 1980); this only skimmed the surface of published accounts. Many dozens of cases had appeared by then.

His methodology also appears lacking. He picks out those "indicators" of fantasy-proneness which the subjects of Mack's book display, and omits the others; and then, why, he discovers that they *do* have those traits. Then he makes up more "indicators of fantasy-proneness" from other traits they have, which seem to include any interest in religion or spirituality, to the point of listing have been raised as a Roman Catholic.

Labeling these people "fantasy-prone" follows a clear agenda: having labeled them thus, we can discount their experiences, just as in the past we could by calling them "crazy," or asking how much they've been drinking, or what they've been smoking.

Worse, he fails to understand that Occam's razor does not simply prescribe the simplest hypothesis, but the simplest one that *accounts for all the facts*. We need a theory that accounts for the *production* and the *content* of the fantasies (assuming them as such), not one that merely labels them fantasies but explains nothing. Why did these individuals fantasize? Because they're fantasy-prone! So answers Nickell. Remember the doctor in Molière who explained that a sleeping-potion makes you fall asleep because it has a "soporific property"? Don't use Occam's razor to cut your own throat.

As for the content of the fantasies (if such), Nickell has no explanation, except to hint that Mack "may be leading his witnesses." The culprit covers his tracks well, considering that Nickell does not seem to have found any evidence of the crime in the hundreds of pages in Mack's book.

Finally, what does it say that Carl Jung attempted precisely the task of understanding the fantasy content of UFO experiences fifty years ago, and that neither the true believers nor the true disbelievers have ever followed up on his work?

Rev. Dan Clore
St. Helens, Ore.

Joe Nickell replies:

Rev. Clore faults my study, yet believes "some form of fantasy experience most likely accounts for the phenomenon." On what basis does he "think" that is so? Intuition? Communion with angels? If he knows of some evidence to that effect, why doesn't he mention it? He did find space to cite a work that Wilson and Barber probably had not seen and that virtually no one took seriously at the time, including many ufologists. Wilson and Barber did foresee that awareness of the existence of fantasy-prone people would have important implications to investigations of paranormal phenomena.

Rev. Clore says my methodology "appears" lacking. In fact, I was able to pick out the indicators that I did because they were present. *I did not "make up more" and I did not list being raised a Roman Catholic as an indicator of fantasy proneness. (Wilson and Barber found that religious "visionaries" like those who talk with the Virgin Mary* were *fantasy-prone types.)*

If the Rev. Clore finds objectionable my labeling certain abductees fantasy prone, why is his label of "some form of fantasy experience" less so? Does it not also tend to discount—publicly and even without foundation—the abductee experience?

As to Occam's razor, given the books and textbooks I have written that discuss the dictum, I hardly think I need be schooled on the subject by one who appears not to understand evidence. One can establish the fact *that someone is a murderer without proving motive.*

I did not discuss the why *of Mack's subjects' fantasy proneness because that was beyond the scope of my study. Why people fantasize was addressed by Wilson and Barber, and why people fantasize alien abductions has been addressed by Robert A. Baker—both of whom I cited.*

Aromatherapy and Chemical Sensitivities

Lynn McCutcheon's article decrying unfounded and exaggerated claims for aromatherapy (*SI*, May/June 1996) brought to mind the problem of Multiple Chemical Sensitivities, which may represent aromatherapy in reverse.

These patients are chronically ill with an apparent multisystem disorder. They are frequently intolerant to some foods, chemicals, and environmental agents at much less than usually tolerated levels. Morbidity varies from mild discomfort to total disability. They are usually free of objective findings and there is an absence of any generally accepted explanation.

In a recent paper (Spyker, D. A. 1995. Multiple chemical sensitivities—syndrome and solution, *Clinical Toxicology* 33[2]:95-99), Spyker describes this problem and points out that many of these patients trace their problem to an experience with some

presumed toxic material where there was also an associated odor. He presents a persuasive case that this syndrome may represent a conditioned reflex where odor has become a conditioned stimulus triggering a variety of physiologic symptoms. He has had success on this basis in treating several patients with a desensitization program.

If this works out, might not not the reverse also be true? Might an aroma, perhaps serendipitously, become a conditioned stimulus for a favorable physiologic response and under certain circumstances become an actual healing agent? I bring this up only to complement and not to contest McCutcheon's thesis.

Albert Rauber, M.D.
Professor Emeritus
Emory University
Atlanta, Ga.

Lynn McCutcheon is somewhat in need of a new database. Patchouli is a labiate shrub from Southeast Asia (*pogostemon patchouly*). The name is derived from the Tamil, *petch* (green), *ilia* (leaf).

Charles Goatley
Peterfield, Hands.
U.K.

Battery of Baghdad

In the matter of "The Enigmatic 'Battery of Baghdad'" (*SI*, May/June 1996), I offer the following comments.

I think that the superficial resemblance of the Baghdad artifact to our own axially-symmetric, carbon-zinc-manganese-dioxide-sal-ammoniac paste, not quite dry cell, has unduly influenced many opinions concerning the device.

While it is apparent that the thing could have been an electric-current-producing device of sorts—and I even believe that the ancient technicians and craftsmen of 2,000 years ago could have had access to at least one strong mineral acid, namely, sulfuric acid (read of the vast quantities of sulfuric acid created in some volcanic eruptions [*Science* May 10, 1966, p. 817])—I do not think that it is necessary to name the artifact "battery" when there may be simpler solutions to the enigma.

The supposedly one-time iron rod of the device is quoted as being "completely oxidized" and is no longer metallic iron. Could it be that the iron rod was not a rod but a tube having a single hole or even capillary holes that are now obliterated by the oxidation of the iron? If such were the case, the Baghdad artifact becomes something from the occult—a "spirit" lamp (alcohol or petroleum spirits, of course). I have in my possession a sketch of an alcohol burner. An iron tube could replace the brass tube, an asphalt plug could replace the cork plug, and the cap layer (relic) of the Baghdad artifact resembles the glass cap of the alcohol burner, which serves to snuff the flame and prevent evaporation of the alcohol. My supposition would require the ancients to have discovered how to concentrate or refine fermentation liquors or petroleum liquids to make volatile, burnable fuels, however. Would a porous or capillary rod of iron or even iron oxide work as a wick? I don't know. Food for thought, or experiment, however.

Hadley Wellborn
Powder Springs, Ga.

Gerhard Eggert replies:

The 'Battery of Bagdad' is really fascinating. Who could resist to speculate about its use? But I know of no evidence for the existence of alcohol or petroleum spirits or of iron rods with a thin hole or capillaries at the time in Mesopotamia. The just took plant oil and a textile wick for their lamps.

Piecing Together a Mystery

In "Exhausting the Mundanely Possible" (*SI*, May/June 1996), Ralph Estling wrote about a "paranormal" experience he had with an envelope that transported itself through time. His point was that such odd occurrences can rectify themselves with a little thought.

I'd like to mention my own recent fall into the "supernatural." It was night and I was alone in the house. The video I was watching had ended, so I shut off the TV and hit the rewind button. As I was getting ready to go to sleep, I began hearing a strange noise from downstairs. (Home alone, remember!) Cautiously I tiptoed down to the kitchen, where I found the water flowing in the sink. The water was whooshing from the faucet, and plink-plinking into the stack of dishes left behind from dinner. Ghosts had turned on the faucet! (Certainly it wasn't *I* who had turned on the water, for I had not been downstairs in 110 minutes—the length of the movie).

A believer would immediately get the willies and reach for the *Sightings* phone number, but I had rational thought on my side. I thought back to an hour and fifty minutes earlier when a human being (me) had last stepped foot in the kitchen; and I remembered washing out a bowl so I could enjoy some ice cream with the movie. Clearly I had left the water running. But that seemed unlike me! I'm usually very attentive! Why hadn't I heard the whoosh and the plink of the water falling in the sink?

Looking at the arrangement of dishes, I saw that they were "leveled out." When I first left the water running, the water made little or no sound. But after a while, a bowl had filled with water, which made it shift to one side of the plate it was resting upon—and the resulting arrangement of plates was quite different from the original setup. By doing this "kitchen-sink archaeology," I saw clearly that certain dish stackings produce noise, while others produce almost no noise at all. I couldn't hear the noise from the sink until almost two hours later, not because ghosts had turned on the faucet two hours later, but because it took a while for the noise to form. By then I was upstairs and watching an engrossing movie.

I think it's quite fun and wonderful and exciting to be able to use scientific thought to piece together a mystery. I don't understand why some people would rather live in a creepy, scary world of ghosts and bugaboos when they can instead live in the sane, predictable—*and* thrilling *and* mysterious—world of science.

Dennis Fiery
Princeton, N.J.

Sagan's 'Does Truth Matter?'

The article by Carl Sagan "Does Truth Matter?" (*SI*, March/April 1996) was very instructive not only for Russian skeptics, but, I think, for the whole skeptical community.

It is not necessary for me to say how much Russian intellectuals appreciate Sagan as a thinker, scientist, and writer.

But, as a Russian, I was especially touched by the part of his article relevant to my country. "Under the tsars," writes Sagan, "religious superstition was encouraged, but scientific and skeptical think-

ing—except by a few famous scientists—was ruthlessly expunged." [Sagan's word was *tame*, not *famous—ED.*]

The first half of this affirmation is true, but the second not.

I must say in connection with this that, personally, I am an ardent enemy of monarchy in general and Russian monarchy especially. But excepting the reign of Nicolas I (1825-1855), the critical and skeptical thinking in Russian science and humanities during the nineteenth and beginning of the twentieth centuries was not ruthlessly expunged. Even under Nicolas I, the works of our greatest poet and thinker, Pushkin, were not suppressed, but were inspired by a profound free thought.

The reign of Alexander II (1855-1881) was especially rich in independent, critically minded writers. The philosophers and literary critics Chernishevski, Dobrolinbov, Pisarev (a most radical freethinker) were favorites of the Russian public at large—not only at Petersburg and Moscow, but in the outlying provinces also.

The works of such eminent (but not privilegedly famed) scientists as Sechenov (neurophysiologist), Vassie; Struve (astronomer, founder of Pulkovo Observatory), Butlerov (chemist), Lebedev (physicist), Daniel Khvolson, senior (hebraist and historian of antique Judaism) are examples of the salutary intellectual atmosphere of that epoch.

Characteristically, when academician Butlerov became an enthusiastic follower of medium Hume and participant in his spiritualist seances, a special investigating commission was formed in the Petersburg University, headed by Mendeleev himself. Hume and Butlerov were exposed and blamed as mystifiers and deceivers.

It is interesting to note that this positive intellectual atmosphere in Russia in the late nineteenth century was colorfully described in the contemporary American literature, namely in the autobiographical book by the famous concert pianist Samuel Chotzinoff (*A Lost Paradise*, Aero Press, New York, 1975). The Chotzinoff family left tsarist Russia and settled in the United States in the end of the century. Reading this remarkable book, we meet the great figure of Chernisheoski and his famous novel *What Must be Done?*—a manifesto of free thought addressed to the younger generation of the epoch.

Concerning the communist era, I must give some commentary to Mr. Sagan's affirmation that "[c]ritical thinking—except by [Soviet] scientists in hermetically sealed compartments of knowledge . . . was punished . . . "

This is absolutely true only for the scientists engaged in Soviet military nuclear and rocket works. Of course we know the tragedy of Soviet biology. We know also the troubles experienced by such great scientists as Kapitsa and Landau. But in general the Soviet era in the physico-technical domain was fruitful, and this is unanimously recognized by the world community. The works of Semenov (Nobelist in chemistry), of Tamm, Frank, and Cerenkov (Nobelists in physics), of Freedman, Seldovich, and Linde (cosmology), of Nicolas Vavilov and Koltzov (genetics, before the Lysenko affair), of Tsiolokovsky (father of space flight)—all this testifies to the powerful élan of Russian science during the post-revolution era.

This part of the article in question tells us, alas, that even for such great American thinkers as Sagan, the history of Russian culture remains terra incognita. What a pity for all us Russians!

Vladimir Lvov
Science Writer
St. Petersburg, Russia

Sagan Responds to Letters

I'm very pleased that my recent book, The Demon-Haunted World: Science as a Candle in the Dark, *briefly excerpted in the March/April 1996 issue of the* SKEPTICAL INQUIRER, *elicited so many thoughtful letters (July/August 1996). Here is an abbreviated response to some of them:*

R. H. Davis worries that a non-superstitious use of the word "spirituality" could be confused with an endorsement of mysticism. This is readily prevented by a single cautionary sentence, and the benefit I think far outweighs the cost.

Gary McGath argues that some metaphysics must underlie all of science—at least the idea that there exists a consistent external reality. I entirely agree, but the acceptance of such a reality comes from the fact that science works. My concern about metaphysics is not just what McGath describes as "the bizarre metaphysical theories philosophers have proposed," but the fact that there is no way to adjudicate between conflicting metaphysical views except by science.

Brian Templeton admonishes me for criticizing easy pseudoscientific targets and avoiding more difficult Judeo-Christian targets. The excerpts from The Demon-Haunted World *printed in the* SKEPTICAL INQUIRER *were chosen by the editor. If Mr. Templeton will look at the full book, I think he will find at least a little of what he's looking for.*

Thomas Munden says I have "left no doubt" about my "belief" in extraterrestrial life. Let me state clearly, as I have done repeatedly, that there is no compelling evidence for extraterrestrial life, and therefore it would be absurd for me to "believe" in it. Belief in the absence of compelling evidence is called faith. Belief after acquiring compelling evidence is called knowledge. The two are quite distinct. What I have argued is that the search for extraterrestrial life is an issue of such surpassing importance, both scientifically and philosophically, that it is worth a sizeable effort to try and find it, and that the idea is not so implausible as to be rejected out of hand.

Finally, as to Vladimir Lvov's thoughtful letter [received later and published in this issue—ED.]: Of course there was a brilliant intelligentsia in nineteenth-century Russia and world-class science and technology in the Soviet era. And of course there was ruthless suppression in both regimes of those few political activists who called for the overthrow, and especially the violent overthrow, of the regime. But I was writing about something different—the absence of widely available direct and non-allusive criticism of doctrines with which the regime has identified; for example, dialectical materialism and the religion of Marxism-Leninism in the Soviet era, or the divine right of kings and the sanctity of the Russian Orthodox Church under the Tsars. My limited knowledge of nineteenth-century Russian literature and the 1839 memoirs of the French traveler the Marquis de Custine may have led me astray, but I know of no Russian equivalents of Mark Twain's or H. L. Mencken's religious writings. Nor do I know of any publication like McKay's Extraordinary Popular Delusions and the Madness of Crowds, *or Martin Gardner's* Fads and Fallacies in the Name of Science. *As I mentioned in* The Demon-Haunted World, *Russia today is awash in pseudoscience and mysticism, as well as a resurgence in superstition and religious mysticism. It remains to be seen how this situation will work itself out.*

Web Is Even Weirder

The article "The Weird World Web" (*SI*, May/June 1996) only barely scratched the surface of bizarre web sites on the Internet. The information superhighway is littered with misinformation trash and detritus, cast upon the byteway by zealots of a hundred different sorts. . . .

Rev. David Michael Rice
Dana Point, Calif.

Egging Things On

Regarding Martin Gardner's column "The Great Egg-Balancing Mystery" (*SI*, May/June 1996)—a wonderful article, clearly deserving a standing ovation.

(Sorry, couldn't help myself!)

Joseph Mockus
Columbus, Ohio

The Magic of Ambigrams

In May/June's News and Comment column you reproduced Scott Kim's "Inversion" of Martin Gardner's name. Readers interested in studying this art form, also known as "ambigrams," further should look for a copy of John Langdon's book *Wordplay* from Harcourt-Brace. For skeptics, the art form itself is a fascinating application of the mind's proclivity for finding familiar patterns in visual cues and disregarding information it considers extraneous. It's almost magic.

W. L. Orlicki
Hemet, Calif.

Johnson and Articles on Evolution

Tom Morrow (Letters, May/June 1996, p. 63) challenges my statement that Phillip Johnson had not read articles on evolution present in publications. Morrow says that I overlooked the Research Notes at the end of Johnson's book that he had read such articles. Morrow cites the fact that Johnson had read "an article by Kenneth R. Miller in the February/March 1994 *Technology Review* ("Life's Grand Design")." Miller's article is questionable, as Morrow notes; therefore it is not a good example of an article on evolution. However, Morrow quotes Johnson as saying that his "very capable associates" have investigated all such examples. This is fascinating. Who are Johnson's "very capable associates"? Law students with a passion for anonymity?

In my review I was referring to more reputable articles on evolution such as, perhaps, "Concerted Evolution in Protists: Recent Homogenization of a Polyubiquitin Gene in *Trichomonas Vaginalis*," by P. J. Keeling and W. F. Doolittle (*Journal of Molecular Evolution* 41:556-562, 1995).

Johnson's Research Notes show that he has read widely, but in fields of minor controversies rather than in the substantive literature of evolution, which he does not tackle.

Thomas H. Jukes
Berkeley, Calif.

More on Vampire Lore

Paul Barber was, of course, correct when he wrote (*SI*, March/April 1996) that we can never know for sure about the origins of vampire folklore. After all, it's not even reliable asking the very person who has an original idea how it came about.

However, we can speculate, and it occurs to me that vampire folklore about "cantankerous peasants who came back as spirits to torment their nearest and dearest" could be seen as a development of "sightings" of deceased relatives. From a belief in these spirits as entities "out there," it might seem to be a logical solution to re-open the grave of one such departed to make sure the physical body was dead. This then gave rise to the genuine observation of the vampiric phenomena in the corpse and the plot was complete.

Even today, sightings or "ghosts" are routinely explained as "restless spirits" who need to be laid to rest, although today there is a more charitable attitude towards the departed souls, and there are solutions which do not require exhumation and a stake through the dead body.

However, both are extraordinary ways of rationalizing extraordinarily unsettling experiences, and are examples of the way in which the attribution of a cause "out there" is so often seen as a more acceptable explanation than the possibility that one's own brain is playing nasty tricks, even when it requires an acknowledgement of occult and paranormal forces.

Brian Martin
Waterlooville, Hants.
U.K.

Medicine Considering Therapeutic Touch

The Health Care Financing Administration (HCFA), the governmental agency that distributes Medicare payments, is currently monitoring four Community Nursing Organization (CNO) demonstration projects. These capitated home care projects are focusing on nurse-driven case management of health care in patients' homes. These three-year projects are to end in December 1996, but Congress may vote to extend them.

Eli Research recently cited Ruth Mitchell of Visiting Nurse Service of New York, one of the CNOs: "[She] reports that her organization is using complementary therapies such as therapeutic touch, visualization, self-massage . . . to address an older population with chronic care problems." She admonishes care providers to avoid ". . . 'cookie-cutter home health' by making a complete [nursing] assessment of environmental, psychosocial, and behavioral factors, not just of the patient's physiological condition . . . ."

Bullough and Bullough reported in "Therapeutic Touch: Why Do Nurses Believe?" (*SI*, Winter 1993) that our government spent $200,000 for therapeutic-touch training for nurses. If HCFA ultimately authorizes reimbursement to nurses for such pseudoscientific practices as therapeutic touch and self-massage instruction, that $200,000 grant will become utterly insignificant. More to the point, such reimbursement would needlessly exacerbate the already dire financial condition of Medicare.

Robert R. Weilacher
Palestine, Texas

(See also our Special Report, "Science or Pseudoscience? Pentagon Grant Funds Alternative Health Study," SI, July/August 1996—ED.)

The letters column is a forum for views on the matters raised in previous issues. Letters should be no more than 250 words. Due to the volume of letters, not all can be published. They should be typed double-spaced. Address: Letters to the Editor, SKEPTICAL INQUIRER, 944 Deer Dr. NE, Albuquerque, NM 87122.

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- Prepares bibliographies of published materials that carefully examine such claims
- Encourages research by objective and impartial inquiry in areas where it is needed
- Convenes conferences and meetings
- Publishes articles that examine claims of the paranormal
- Does not reject claims on a priori grounds, antecedent to inquiry, but examines them objectively and carefully

The Committee is a nonprofit scientific and educational organization.
The SKEPTICAL INQUIRER is its official journal.

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